

AGRICULTURAL FACULTY MEETING

**Wednesday, April 11, 2012
3:30 p.m.
Dean's Auditorium, Pfendler Hall**

1. Call to Order - Dean Jay T. Akridge
2. Approval of Agenda
3. Report on Core Curriculum, Progress and Next Steps – Dale Whittaker
4. Document VII - Proposed Revision of the Agricultural Faculty Constitution – Christian H. Krupke
5. Consent Agenda – Action Items

Approval of Minutes of December 8, 2011 Agricultural Faculty Meeting
Document VIII – Agricultural and Biological Engineering
Document IX – Agricultural Economics
Document X – Agriculture
Document XI – Agronomy
Document XII – Animal Sciences
Document XIII – Food Science
Document XIV – Forestry and Natural Resources
Document XV – Horticulture and Landscape Architecture
Document XVI – Natural Resources and Environmental Science
Document XVII – Youth Development and Agricultural Education
Document XVIII – Curriculum and Student Relations Committee
Approval of 2012 May and August Degree Candidates

6. Memorial Resolutions
7. Report Items

Standing Committee Reports

Agenda and Policy – Christian H. Krupke
Area Promotions – Jay T. Akridge
Curriculum and Student Relations – Barbara L. Golden
Grade Appeals – Marcos Fernandez

University Senate Report – Peter M. Hirst

Dean's Comments – Jay T. Akridge

8. Other Business

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Constitution of the Agricultural Faculty Purdue University

Proposed Revisions – May, 2012

Deletions – ~~Red~~

Additions - Green

ARTICLE I. COMPOSITION AND ADMINISTRATION

- A. Composition of the Agricultural Faculty. All employees with the rank of at least Assistant Professor and those having the rank of Instructor for at least two years shall be eligible to vote on all Agricultural Faculty matters. Included are those individuals appointed as an Adjunct Faculty (as defined in Executive Memorandum C-12, 25 August 1987), or a Clinical Faculty member. Research Faculty members may vote on all items, excepting curricular matters. Associate and Affiliate administrative or professional appointees are specifically excluded.
- B. Chief Administrative Officer. The chief administrative officer of the Agricultural Faculty is the Dean of Agriculture.
- C. Instructional Department. An Instructional Department as used in this document is defined in the University Academic Procedures Manual, Section K-1.

ARTICLE II. POWERS OF THE AGRICULTURAL FACULTY

- A. The Faculty of Agriculture shall have jurisdiction, consistent with University policy, of specific internal affairs, and shall discuss and make recommendations regarding all matters affecting its responsibilities in teaching, research, and extension. Specifically the Agricultural Faculty shall:
 - 1. Establish course content, curricula, requirements, and certification for graduation.
 - 2. Advise the Dean in matters of educational policy and long-term planning that affect the responsibilities of the Agricultural Faculty.
 - 3. Advise the Dean and others on matters that concern Agricultural Faculty and student welfare.

ARTICLE III. MEETINGS OF THE AGRICULTURAL FACULTY

- A. The powers of the Agricultural Faculty shall be exercised at open meetings of the entire Agricultural Faculty, convened after proper written notification. The presiding officer shall be the Dean or his or her designee. The Dean shall appoint a Secretary of the Agricultural Faculty who shall keep the minutes of all meetings and a Parliamentarian who shall rule on all questions of procedure.
 - 1. Regular meetings shall be called at least once during each of the fall and spring semesters of the University calendar, at times set by the Agenda and Policy Committee. At least one week prior to the announced date of the meeting, the Agenda and Policy Committee shall distribute an announcement and agenda for the meeting to each voting member.
 - 2. Fifteen percent of the Agricultural Faculty shall constitute a quorum at an Agricultural Faculty meeting. No meeting shall be held in the absence of a quorum.
 - 3. Decisions of the Agricultural Faculty shall be reached by a simple majority of the Agricultural Faculty attending any called meeting.
 - a. Voting will be by secret ballot if requested by any Agricultural Faculty member present.

- b. A mail **or electronic** vote by the Agricultural Faculty shall be conducted on any issue if requested by any voting Agricultural Faculty member and approved by one-fifth of the members present. Issues in all mail **or electronic** ballots shall be decided by a majority of the votes cast.
- 4. To encourage informed and efficient discussion of Agricultural Faculty business, only items appearing on the distributed agenda may be acted upon at a meeting, unless consent is voted by three-fourths of the members present. Written reports submitted for information only, even though not requiring immediate Agricultural Faculty action, shall whenever possible be distributed in advance of the meeting, and be noted on the agenda for question and discussion only. Any Agricultural Faculty member may introduce, for discussion only, any item not on the agenda at the appropriate time during regularly scheduled Agricultural Faculty meetings.
- 5. The minutes of each Agricultural Faculty meeting shall be distributed to each Agricultural Faculty member within 10 days after the meeting, and to the Offices of the President, Vice-Presidents, Deans, and Directors.
- 6. Special meetings may be called either by the Dean or by the Agenda and Policy Committee, or upon written request to the Agenda and Policy Committee by 10 or more Agricultural Faculty members. At these meetings, the same rules of agenda and procedure shall apply as at regular meetings.
- 7. Emergency meetings of the Agricultural Faculty may be called by the Dean or his or her designee in consultation with a representative of the Agenda and Policy Committee by verbal notification of each Department Head and Administrative Office at least two hours before such an emergency meeting is to be convened. Regular rules of procedure shall apply except that such emergency meetings may consider and take appropriate action on emergency problems only.

ARTICLE IV. COMMITTEES OF THE FACULTY OF AGRICULTURE

- A. The committees of this Agricultural Faculty include the following: Area Promotions Committee, Standing Committees of the Agricultural Faculty, Ad Hoc Committees of the Agricultural Faculty, and Administrative Committees. The Dean shall distribute annually to all Agricultural Faculty members a list giving the membership of all committees of these types.
 - 1. Area Promotions Committee. This committee shall receive and act upon the recommendations of the primary committees in Agriculture in the regular promotions procedure of the University. Membership of this committee shall include the Dean of Agriculture who shall be Chairperson and call meetings, the Director of Academic Programs, the Director of the Cooperative Extension Service, the Director of Agricultural Research Programs, the Director of International Programs in Agriculture, Department Heads, and Agricultural Faculty Representatives (as described hereafter in Article IV) of the departments that normally generate promotions. A quorum of this committee shall consist of seven-eighths of its membership with at least one-third of those present being Agricultural Faculty representatives. Absentee ballots shall not be permitted. This committee will carry out its functions in agreement with the "Policy Concerning Promotions," page N-73, *Academic Procedure Manual*.
 - a. Eligibility to serve as an Agricultural Faculty representative of this committee shall be limited to tenured Full Professors in Agriculture who do not have major administrative responsibilities.
 - b. The Agricultural Faculty of each department shall elect one eligible Agricultural Faculty representative to the committee according to the following procedures.
 - i. Candidates shall be nominated at an open meeting of the Agricultural Faculty of the department.
 - ii. Each nominee must express willingness to serve if elected.
 - iii. Elections shall be by written ballot in which all members of the Agricultural Faculty (as defined in Article I, A) in residence of a department have an opportunity to vote.
 - iv. To be elected, a candidate must receive a majority of ballots cast.

- v. Elections shall be concluded before July 1 of the year in which the term of service on the committee begins.
 - c. The regular term of service for Agricultural Faculty representatives shall be three years, with approximately one-third of the apportionment elected each year according to a rotation schedule among the departments. The Agenda and Policy Committee shall be empowered to establish details of the rotation schedule and to make adjustments in this schedule if necessitated by a change in the number of departments. Each regular term of service shall begin July 1. There shall be no restrictions on consecutive terms of service.
 - d. An Agricultural Faculty representative who is unable to complete the term of service or who is unable to participate in the affairs of the Area Promotions Committee shall be replaced by the department represented. Procedures for filling such unexpired terms or temporary vacancies on the Committee shall be the same as for the election to a full term, except for the time of election.
2. Standing Committees of the Agricultural Faculty. Such committees shall deal with policy or action matters of continuing concern to the Agricultural Faculty. They shall be established or terminated only under the provisions of the constitution.
- a. Terms of membership on all Standing Committees shall commence one month prior to the last official day of the spring semester unless otherwise specified. Before the last official day of the spring semester, the newly elected Chairperson shall provide the Secretary of the Agricultural Faculty with a list of the officers of his or her committee. Members of Standing Committees shall be elected prior to March 1 in an open meeting of each department, unless otherwise specifically stated. No Department Head shall be elected to serve.
 - b. Unless otherwise specifically stated, terms of membership shall be three years for elected members, with one-third of the members newly elected each year. Unless otherwise stated, no member shall be eligible for immediate re-election after completion of a full-term.
 - c. Excepting the Grade Appeals Committee, a Chairperson shall be elected annually in a meeting held no later than the last official day of the spring semester or May 1, whichever is earlier, by majority vote of the newly elected and continuing voting members. The organizational meeting shall be called and chaired by the retiring Chairperson.
 - d. Each committee has the responsibility for organizing itself, establishing a frequency for conducting business commensurate with achieving stated or perceived objectives in each area.
 - e. At least once each academic year, committee Chairpersons shall review with committee members those sections of the constitution and/or Academic Procedure Manual that apply to the activities of that committee.
 - f. Each committee may appoint such sub-committees as it deems necessary.
 - g. Each Standing Committee shall submit annually a written report to the Agricultural Faculty.
 - i. Agenda and Policy Committee. The functions of this committee shall be to maintain liaison between the administrative officials of Agriculture and the Agricultural Faculty, and to guide the Agricultural Faculty in the efficient exercise of its powers.
 - A. Schedule, announce, and prepare the agenda for Agricultural Faculty meetings in cooperation with the Dean.
 - B. Identify problems and counsel the Dean on policy matters of concern to the Agricultural Faculty.
 - C. Provide for periodic reports to the Agricultural Faculty from the Dean and the major administrative officers in the areas of teaching, research, and extension.

- D. Act as a committee on committees: conduct the election of Senate representatives from Agriculture; and coordinate the activities of other standing committees of the Agricultural Faculty.
 - E. The membership of the Agenda and Policy Committee shall consist of a voting representative from each Instructional Department and the Chairperson of the Senate representatives from Agriculture. The Dean, or his or her designee, and the Secretary of the Agricultural Faculty shall serve as non-voting members of the committee.
- ii. Curriculum and Student Relations Committee. The functions of this committee shall be to coordinate and evaluate on a continuing basis the course work, curricula, and teaching offered by the Instructional Departments of the College of Agriculture; to examine and make recommendations to the assembled Agricultural Faculty on proposed changes in course work, curricula, and degree requirements; and to ensure prompt attention to educational problems of students.
- ~~A. Membership of this committee shall be one representative from each Instructional Department. *Pro tempore* members may be appointed by the Dean to give recognition to interdisciplinary and other programs. The Director of Academic Programs, or his or her designee, and the Associate Director of Academic Programs shall serve as *ex officio* members. The undergraduate Agricultural Council shall select to serve as a non-voting member of this committee one undergraduate student from a pool consisting of one student nominated by the Department Head from each Instructional Department. One graduate student will serve as a non-voting member. The Secretary of the Faculty shall randomly select one graduate student from a pool of graduate students consisting of one student nominated by the Department Head from each Instructional Department.~~
- Membership of this committee shall be one representative from each instructional department and the Agricultural Faculty representative to the university Undergraduate Curriculum Council. *Pro-tempore* members may be appointed by the Dean to give recognition to interdisciplinary and other programs. The Director of Academic Programs, or his or her designee; the Associate Director of Academic Programs; and the Director of Agricultural Research Programs, or his or her designee shall serve as *ex officio* members. One undergraduate student and one graduate student shall serve as non-voting members. Student members shall be randomly selected by the Secretary of the Agricultural Faculty from a pool of one undergraduate student and one graduate student nominated by the Department Head from each instructional department.**
- iii. Grade Appeals Committee. The function of this committee is to provide recourse to a student who believes that an inappropriate grade has been assigned as a result of prejudice, caprice, or other improper conditions such as mechanical error, or assignment of a grade inconsistent with those assigned other students. Additionally, a student may challenge the reduction of a grade assigned for his/her alleged dishonesty.
- A. This committee shall consist of three members of the instructional Agricultural Faculty; two students, undergraduate or graduate, corresponding to the status of the appellant; and a non-voting Chairperson. The Chairperson will be an Assistant or Associate Dean appointed by the Dean.
 - 1. Faculty membership of this committee shall be randomly selected by the Chairperson of the Agenda and Policy Committee from a pool consisting of one Agricultural Faculty member elected annually from each Instructional Department. Three members will be selected as regular members and all others in the pool shall serve as alternate members. No member shall serve more than two consecutive terms.

2. Student membership shall consist of two undergraduate students and two graduate students. In addition there will be nine alternates from each category selected to be used as necessary. ~~Undergraduate regular and alternate members shall be selected annually by the undergraduate Agricultural Council from a pool of undergraduate students consisting of one student nominated by the Department Head from each Instructional Department. Before the last official day of the spring semester, the presiding officer of the Agricultural Council shall provide the Secretary of the Agricultural Faculty with a list of the regular and alternate undergraduate students selected for the Grade Appeals Committee.~~

Undergraduate student members shall be randomly selected from a pool of one undergraduate student nominated by the Department Head from each instructional department. Before the last official day of the spring semester, the Secretary of the Agricultural Faculty in consultation with the Chairperson of the Agenda and Policy Committee shall randomly select two undergraduate students from the pool and convey their names to the Chairperson of the Grade Appeals Committee. The remaining undergraduate students in the pool shall be considered alternate members of the committee to serve as necessary.

Graduate student regular members shall be selected in a random fashion from a pool of students from each Instructional Department. Annually graduate students from each Instructional Department shall elect one graduate student from their Instructional Department to serve in the pool for a one-year period. Before the last official day of the spring semester, the Secretary of the Agricultural Faculty in consultation with the Chairperson of the Agenda and Policy Committee shall randomly select two graduate students from the pool and convey their names to the Chairperson of the Grade Appeals Committee. The remaining graduate students in the pool shall be considered alternate members of the committee to serve as necessary.

~~[Delete the following. University policy now defines grievance procedures for academic personnel.]~~

- iv. ~~Grievance Hearing Committee. The function of this committee is to provide a means of fairly considering and acting upon complaints of all academic personnel including faculty, instructors, post doctoral residents, post doctoral research assistants and associates, graduate assistants in research, and graduate instructors in research in their roles as academic employees of the University; but not in their roles as students.~~
 - A. ~~Membership of this committee shall consist of 30 individuals selected at random from the Agricultural Faculty who are in tenure track positions. The committee shall consist of at least one third Professors and at least two thirds tenured faculty members. Selection shall take place prior to March 1 by procedures designed by the Secretary of the Agricultural Faculty and approved by the Agenda and Policy Committee. No Agricultural Faculty member selected to serve shall hold the position of President, Vice President, Dean, Associate Dean, Assistant Dean, Director, Associate Director, Assistant Director, Department Head, Associate Department Head, Assistant Department Head or act in any of the above capacities.~~
 1. ~~Each member shall serve a two-year term; however, to ensure continuity, 15 members shall be newly selected each year.~~
 2. ~~The Grievance Hearing Committee Chairperson shall be a tenured Full Professor. The Chairperson shall be elected annually in a meeting held no later than the last official day of the spring semester or May 1, whichever~~

~~is earlier, by a majority vote of the newly selected and continuing members. The organizational meeting shall be called and chaired by the retiring Chairperson to elect a new Chairperson and to review the committee's charge and operating procedures. Upon the election of a Chairperson, this information will be transmitted to the Secretary of the Agricultural Faculty who shall inform the Secretary of University Faculties and the Provost.~~

~~B. The process for resolving grievances for academic personnel of the College of Agriculture shall be conducted in accordance with Executive Memorandum C-19 (revised), 31 Oct. 1997.~~

3. Ad Hoc Committees of the Agricultural Faculty. Such committees shall deal with policy or action matters not delegated to an established standing committee and unlikely to require continuing attention. Such committees shall be established by the Dean or by vote of the Agricultural Faculty. Unless otherwise provided, such committees shall function by the following rules:
 - a. Size, membership, and leadership of these committees shall be determined by the Dean, in consultation with the Agenda and Policy Committee.
 - b. Such committees shall make a written report and final recommendations to the Agricultural Faculty.
 - c. Membership shall extend for the duration of the committee, and the committee shall be disbanded upon acceptance of its report.
4. Administrative Committees upon Which Agricultural Faculty Members Serve. Such committees shall deal with regular tasks of administering the established responsibilities of the subdivisions within Agriculture. Proposals for major changes in activities or policies stemming from these committees will be reported to the Agricultural Faculty. Except when otherwise provided, these committees shall be established by the Dean after consultation with appropriate major administrative assistants to determine the need, membership, terms of service, leadership, and reporting requirements.

ARTICLE V. REPRESENTATION TO THE UNIVERSITY SENATE

- A. Responsibilities. The Senators from Agriculture shall be responsible for regular participation in the activities of the University Senate, for communicating to the Faculty of Agriculture and its subdivisions the direction of Senate actions and deliberations, and for transmitting viewpoints and discussions of their Agricultural Faculty to the University Senate.
- B. Election Procedure.
 1. The Agricultural Faculty shall elect the number of Senators apportioned to Agriculture. Terms of office shall be three years, with approximately one-third of the apportionment elected each year prior to March 1.
 2. Each Instructional Department shall have at least one, but no more than two, Agricultural Faculty serving as Senators.
 3. Each department shall elect one Agricultural Faculty member (as defined in Article I, A) to serve as its Senator according to the following procedures:
 - a. Candidates must be nominated at an open meeting of the department.
 - b. Nominees must state their willingness to serve after reviewing Senate rules of operation and attendance.

- c. Elections shall be by secret ballot in which all members of the Agricultural Faculty in residence of a department have an opportunity to vote.
 - d. To be elected, a candidate must receive a majority of ballots cast.
- 4. In addition to the Senators elected as departmental representatives, Senators-at-large shall be elected and so designated by the Agricultural Faculty to fill the remaining number of Senate vacancies assigned to Agriculture.
 - a. Each department eligible to elect a Senator may submit only one nominee for Senator-at-large. Such nominees will be selected by the departments in a manner identical to regular Senators. Nominees will be forwarded to the Secretary of the Agricultural Faculty.
 - b. Election of Senators-at-large shall be by mail **or electronic** ballot of the entire Agricultural Faculty. Ballots shall contain names of all candidates in random order. Each Agricultural Faculty member may cast votes equal to but not to exceed the number of Senate vacancies to be filled. That number of candidates receiving the most votes shall be elected.
 - c. The number of votes cast for each candidate shall be filed with the Dean.
- 5. Immediately following each annual election, all Senators from Agriculture shall meet at the call of the Dean and elect a Chairperson. The Chairperson shall act as a spokesman for the delegation and shall serve on the Agenda and Policy Committee.
- 6. Senators unable to complete their terms or unable to attend Senate meetings for periods of one regular semester or more shall be replaced. Replacement for shorter periods of absence shall be at the option of the Senator in question or the department represented. In either case, the replacement of a Senator shall be for the duration of the unexpired term. Senators who are aware of the forthcoming need for their replacement should notify the Chairperson of the Agenda and Policy Committee.
 - a. To replace Senators elected under B.3 above, the department represented shall elect a replacement (according to the procedures of B.3) upon request by the Chairperson of the Agenda and Policy Committee.
 - b. Senators-at-large shall be replaced by the Agenda and Policy Committee from the most recent list of candidates filed under Article V, B.4, above. Candidates not previously elected shall be considered alternates, in the order of votes received. Should a second replacement be required, or should the first alternate be unavailable, the second alternate would be selected, etc.

ARTICLE VI. AMENDMENTS TO THE CONSTITUTION

- A. Initiation of Amendments. An amendment to this constitution may be initiated by two-thirds vote of the Agenda and Policy Committee, or by written petition signed by 10 members of the Faculty of Agriculture to the Agenda and Policy Committee.
- B. Ratification. Any properly initiated amendment petition shall be placed on the agenda of the next regular or special meeting of the Agricultural Faculty for discussion. At such a meeting, any proposed amendment may be further amended by a two-thirds vote of those in attendance. Thereafter, it shall be submitted to a mail **or electronic** ballot of the entire Agricultural Faculty, in which a favorable vote by a majority of those voting shall be necessary for ratification.

ARTICLE VII. REVIEW OF THE CONSTITUTION

- A. The Constitution shall be reviewed by the Agenda and Policy Committee every five years. Any changes resulting from such review shall follow the conditions of Article VI.

**Department of Agricultural and Biological Engineering
Proposed Course and Curricular Changes Spring 2012**

A. COURSES TO BE DELETED

None

B. COURSES TO BE ADDED

None

C. COURSES TO BE CHANGED

None:

D. CURRICULAR CHANGES

I. Establishment of Areas of Specialization for Biological Engineering Degree Program

Major: Biological and Food Process Engineering

Areas of Specialization:

Food and Biological Process Engineering

Pharmaceutical Process Engineering

Cellular and Biomolecular Engineering

RATIONALE:

During spring semester 2011, the Agricultural and Biological Engineering Department proposed that three majors be established under the Biological Engineering Degree Program. The names of those three majors were identical to the three areas of specialization being proposed in the current document. The original document was approved by the faculty of the College of Agriculture in the spring of 2011. However, when the companion document was submitted to the Engineering Curriculum Committee, significant concerns were expressed. The College of Engineering does not have majors but instead has areas of specialization. These specializations illustrate to students how plans of study can be adapted to specific career objectives. The proposed change will be consistent with the terminology and format used by the College of Engineering and it will not require approval from the Engineering faculty. Students will receive a degree in Biological Engineering with a major of Biological and Food Process Engineering and will be able to choose one of the above specializations that best fits their career objectives. The establishment of the specializations will give more visibility to our Pharmaceutical Process Engineering and to our Cellular and Bio-molecular Engineering programs. For the purpose of clarification, the Department also offers a degree in Agricultural Engineering and under that degree students can major in either Environmental and Natural Resource Engineering or Agricultural Engineering.

Supporting Documents – Establishment of Biological Engineering Specializations

Biological Engineering Plan of Study

Food and Biological Process Engineering Specialization

(Credit Hours Required for Graduation: 135)

Freshman Year

First Semester

4	CHM	11500	General Chemistry I
4	ENGL	10600	English Composition I
2	ENGR	13100	Transforming Ideas to Innovation I
4	MA	16500	Plane Analytic Geometry and Calculus I
3			General Education Elective**
17			

Second Semester

4	CHM	11600	General Chemistry II
3	COM	11400	Fundamentals of Speech Communications
2	ENGR	13200	Transforming Ideas to Innovation II
4	MA	16600	Plane Analytic Geometry and Calculus II
4	PHYS	17200	Modern Mechanics
17			

Sophomore Year

Third Semester

4	ABE	20100	Thermodynamics of Biological Systems I
1	ABE	29000	Sophomore Seminar
4	BIOL	11000	Fundamentals of Biology I
4	CHM	25700	Organic Chemistry*
4	MA	26100	Multivariate Calculus
17			

Fourth Semester

3	ABE	20200	Thermodynamics of Biological Systems II
3	CHE	32000	Statistical Modeling
3	FN	20500	Food Science I or BCHM 30700 Biochemistry
3	MA	26500	Linear Algebra
3	MA	26600	Ordinary Differential Equations
3			General Education Elective**
18			

Junior Year

Fifth Semester

3	ABE	30100	Modeling & Computation Tools in Biological Engineering
3	ABE	30300	App of Phys Chemistry to Biological Processes
4	CHE	37700	Momentum Transfer
3	PHYS	24100	Electricity and Optics
3			General Education Elective**
16			

Sixth Semester

3	ABE	37000	Biological/Microbial Kinetics and Reaction Engineering
4	ABE	45400	Transport Processes in Biological and Food Process Systems
4	BIOL	22100	Introduction to Microbiology
4	CHE	37800	Heat and Mass Transfer
3			General Education Elective**
18			

Senior Year

Seventh Semester

1	ABE	49000	Professional Practice in Agricultural and Biological Engineering
4	ABE	55500	Biological and Food Processing Unit Operations
4			Biology or Food Science Selective++
3			Engineering Selective++
3			General Education Elective**
15			

Eighth Semester

3	ABE	46000	Sensors and Process Controls
4	ABE	55600	Biological and Food Process Design
3	ABE	58000	Process Engineering of Renewable Resources
4			Biology or Food Science Selective++
3			General Education Elective**
17			

** Eighteen credit hours of General Education Electives must be chosen in accordance with the College of Agriculture's Core Graduation Requirements and the College of Engineering's General Electives requirements, which are summarized in the ABE Student Handbook.

*Students who apply for medical school need two semesters of organic chemistry and should take CHM 25500 and CHM 256.

**See list of approved selectives for the FBPE major in the ABE Student Handbook.

Biological Engineering Plan of Study

Pharmaceutical Process Engineering (PPE) Specialization

(Credit Hours Required for Graduation: 136)

Freshman Year

First Semester

4	CHM	11500	General Chemistry I
4	ENGL	10600	English Composition I
2	ENGR	13100	Transforming Ideas to Innovation I
4	MA	16500	Plane Analytic Geometry and Calculus I
3			General Education Elective**
17			

Second Semester

4	CHM	11600	General Chemistry II
3	COM	11400	Fundamentals of Speech Communications
2	ENGR	13200	Transforming Ideas to Innovation II
4	MA	16600	Plane Analytic Geometry and Calculus II
4	PHYS	17200	Modern Mechanics
17			

Sophomore Year

Third Semester

4	ABE	20100	Thermodynamics of Biological Systems I
1	ABE	29000	Sophomore Seminar
4	BIOL	11000	Fundamentals of Biology I
4	CHM	25700	Organic Chemistry +
4	MA	26100	Multivariate Calculus
17			

Fourth Semester

3	ABE	20200	Thermodynamics of Biological Systems II
3	CHE	32000	Statistical Modeling
3	BCHM	30700	Biochemistry
3	MA	26500	Linear Algebra
3	MA	26600	Ordinary Differential Equations
3			General Education Electives
18			

Junior Year

Fifth Semester

3	ABE	30100	Modeling & Computation Tools in Biological Engineering
3	ABE	30300	App of Phys Chemistry to Biol Processes
4	CHE	37700	Momentum Transfer
3	IPPH	36200	Basic Pharmaceuticals I
3	PHYS	24100	Electricity and Optics
16			

Sixth Semester

3	ABE	37000	Biological/Microbial Kinetics and Reaction Engineering
4	ABE	45400	Transport Processes in Biological and Food Process Systems
4	BIOL	22100	Introduction to Microbiology
4	CHE	37800	Heat and Mass Transfer
3	IPPH	36300	Basic Pharmaceuticals II
18			

Senior Year

Seventh Semester

1	ABE	49000	Professional Practice in Agricultural and Biological Engineering
4	ABE	55500	Biological and Food Processing Unit Operations
3	IPPH	56200	Introduction to Mfg Process
3			Engineering Selective++
6			General Education Elective**
17			

Eighth Semester

3	ABE	46000	Sensors and Process Controls
4	ABE	55600	Biological and Food Process Design
3	ABE	58000	Process Engineering of Renewable Resources
3			General Education Elective**
3			Pharmaceutical Science Selective**
16			

** Eighteen credit hours of General Education Electives must be chosen in accordance with the College of Agriculture's Core Graduation Requirements and the College of Engineering's General Electives requirements, which are summarized in the ABE Student Handbook.

+ Students who apply for medical school need two semesters of organic chemistry and should take CHM 25500 and CHM 256.

++See list of approved selectives for the PPE major in the ABE Student Handbook.

Biological Engineering Plan of Study

Cellular & Biomolecular Engineering Specialization

(Credit Hours Required for Graduation: 135)

Freshman Year

First Semester

4	CHM	11500	General Chemistry I
4	ENGL	10600	English Composition I
2	ENGR	13100	Transforming Ideas to Innovation I
4	MA	16500	Plane Analytic Geometry and Calculus I
3			General Education Elective**
17			

Second Semester

4	CHM	11600	General Chemistry II
3	COM	11400	Fundamentals of Speech Communications
2	ENGR	13200	Transforming Ideas to Innovation II
4	MA	16600	Plane Analytic Geometry and Calculus II
4	PHYS	17200	Modern Mechanics
17			

Sophomore Year

Third Semester

4	ABE	20100	Thermodynamics of Biological Systems I
1	ABE	29000	Sophomore Seminar
3	BIOL	23000	Biology of the Living Cell or Biol 23100 or Bchm 30700
4	CHM	25700	Organic Chemistry*
2	IT	22600	Biotechnology Lab I or IT 227 Biotechnology Lab II
4	MA	26100	Multivariate Calculus
18			

Fourth Semester

3	ABE	20200	Thermodynamics of Biological Systems II
3	CHE	32000	Statistical Modeling
2	CNIT	22700	Bioinformatics
3	MA	26500	Linear Algebra
3	MA	26600	Ordinary Differential Equations
3			General Education Elective**
17			

Junior Year

Fifth Semester

3	ABE	30100	Modeling & Computation Tools in Biological Engineering
3	ABE	30300	App of Phys Chemistry to Biol Processes
4	CHE	37700	Momentum Transfer
3	PHYS	24100	Electricity and Optics
3			General Education Elective**
16			

Sixth Semester

3	ABE	37000	Biological/Microbial Kinetics and Reaction Engineering
4	ABE	45400	Transport Processes in Biological and Food Process Systems
4	CHE	37800	Heat and Mass Transfer
3			Biology Selective
3	ABE	49500	Cell & Molecular Design Principles
17			

Senior Year

Seventh Semester

1	ABE	49000	Professional Practice in Agricultural and Biological Engineering
4	ABE	55500	Biological and Food Processing Unit Operations
3			Biology or Science Selective++
3			Engineering Selective
3			General Education Elective**
3			General Education Elective**
17			

Eighth Semester

3	ABE	46000	Sensors and Process Controls
4	ABE	55600	Biological and Food Process Design
3	ABE	58000	Process Engineering of Renewable Resources
3			Biology or Science Selective
3			General Education Elective**
16			

** Eighteen credit hours of General Education Electives must be chosen in accordance with the College of Agriculture's Core Graduation Requirements and the College of Engineering's General Electives requirements, which are summarized in the ABE Student Handbook.

*Students who apply for medical school need two semesters of organic chemistry and should take CHM 25500 and CHM 256.

AGRICULTURAL ECONOMICS
Proposed Course and Curricular Changes

I. Courses to be deleted: NONE

II. Courses to be added:

(3 credits) AGE 51600 Mathematical Tools for Agricultural and Applied Economics

This course provides first year graduate students and advanced undergraduate students with the specific set of applied mathematical tools needed to support graduate coursework in microeconomics, macroeconomics, economic programming, and econometrics. The course reviews skills and concepts from a number of fields of mathematics including matrix algebra, calculus, optimization theory, and mathematical statistics. The course emphasizes specific applications to economic theory and applied problems in agricultural economics and related areas. Students should be comfortable with introductory-level calculus before entering the course.

III. Courses to be changed: NONE

IV. Curricular changes: NONE

Supporting document for New Graduate Course**AGEC 51600 Mathematical Tools for Agricultural and Applied Economics**

Gerald Shively, Professor and Associate Head, Department of Agricultural Economics

shivelyg@purdue.edu

March 7, 2012

A. Justification for the Course:

As part of a comprehensive department review in 2005 the Department of Agricultural Economics assessed the mathematical preparation of students entering the M.S. program in Agricultural Economics. At that time it was determined that a substantial portion of students entering the M.S. program had insufficient mathematical preparation to excel in the degree program. Unfortunately, the wide range of mathematical topics requiring coverage, and the specific applied linkages between these topics and economic analysis could not be addressed through any single course offering. In response, the department designed and established a temporary course (AGEC 596M) and began teaching it to incoming students during the fall semester. A diagnostic exam administered to accepted students during the preceding summer was used to establish a basis for advising students into the course. Having taught the course under a temporary designation for the past three years, we are now seeking to establish a permanent number for the course.

This course provides first year graduate students and advanced undergraduate students (especially those accepted into the department's 3+2 program) with the set of mathematical tools needed to support graduate coursework in agricultural economics, and specifically in microeconomics, macroeconomics, economic programming, and econometrics. The course reviews skills and concepts from matrix algebra, calculus, optimization theory, and mathematical statistics, with specific applications to economic theory and applied problems in agricultural economics and related fields. Students must be comfortable with high school level algebra before entering the course, but the primary aim of the course is to strengthen existing mathematical skills and apply those skills through specific links to economic problems in a way that helps students successfully perform in other required graduate coursework in Agricultural Economics. The 500-level designation is justified by the targeting of the course at first-semester M.S. students and (occasionally) upper-level undergraduate students who are either enrolled in a 3+2 program or are considering graduate study in Agricultural Economics. Based on historic enrollment in the temporary course, we anticipate that approximately 15 students will enroll in the course each fall.

B. Learning Outcomes and Method of Evaluation of Assessment

Consistent with College-wide graduate student learning outcomes, the learning outcomes for AGEC 516 include:

1. Knowledge and Scholarship: the ability to identify and conduct original research, scholarship or creative endeavors;
2. Communication: the ability to effectively communicate their field of study;
3. Critical Thinking and Problem Solving: think critically, creatively and solve problems in their field of study;
4. Ethical Conduct: conduct research in an ethical and responsible manner; and
5. Professional Development: demonstrate attributes of professional development consistent with expectations within their field of study

The most relevant learning outcome in the context of this course is #3. The course focuses on mathematical problem formulation and solution, and establishes a skill set that is aimed at supporting all other objectives as part of the student's graduate program.

The methods by which student learning outcomes are evaluated and assessed in the course include traditional direct approaches (graded homework assignments, graded quizzes, graded exams) and in-class opportunities for students to demonstrate knowledge indirectly through class participation (e.g. problem solving at the board; planned and impromptu group exercises). Ultimate success in the graduate program is also strong indirect evidence of achievement of course-specific learning outcomes, since the course material provides a foundation for research and scholarship.

Performance in this class will be based on scores from homework assignments, quizzes, tests, and bootcamp team performance with the following weightings:

Homework	40%
Quizzes and Bootcamp team score	5%
Midterm	25%
Final exam	30%

Homework assignments will be provided each week and must be turned in no later than 5pm on the due date. Late homework assignments will be penalized at 10% per day without prior approval from the instructor. Collaboration is allowed on assignments; however each student should submit an original write-up and indicate the names of all group members on the top right corner. The first two weeks of the course will be an algebra review ("bootcamp") culminating in a bootcamp final quiz. Assignments during bootcamp will be purely for practice and will not be graded. Students will be randomly assigned to teams of 3-4 students. The team score will be the average score of all team

members on the bootcamp final quiz. In addition to the bootcamp final quiz, pop quizzes may be given in class at the discretion of the instructor. If such quizzes are used, the student's individual performance will replace the bootcamp team score. A midterm will be held approximately during the week following October break. A final exam will be given during the regularly scheduled final exam period. Exams will be cumulative in coverage. Make up exams will not be given except in the case of prior approval from the instructor.

C. Prerequisites:

Students should be enrolled graduate students or (in the case of upper division undergraduate students) have the prior consent of the instructor and/or director of the graduate program in Agricultural Economics. Students should be comfortable with introductory-level calculus before enrolling in the course but beyond this there is no specific course prerequisite.

D. Course Instructor:

The instructor will normally be selected from the graduate program teaching staff. The initial instructor of record will be Gerald Shively, Professor of Agricultural Economics, who also currently serves as Head of the Graduate Program in Agricultural Economics.

E. Course Outline

Class	Topic	Chiang and Wainwright	Simon and Blume	Hoy et al
1	Welcome, introductions, syllabus, examples of modeling			
2	Algebra	10	5	
3	Functions and graphing	2.5	2.1-2.2	
4	Functions and graphing	2.5		
5	Systems of linear equations		6	7
6	Vectors and Matrices		7.1-7.4	10.1
7	Quiz on Bootcamp material			
8	Vectors and Matrices	4	10	10.1
9	Matrix operations	4	8	8
10	Matrix operations	4	8	8
11	Determinants & Inverse matrices	5	9, 11, 26	9
12	Determinants & Inverse matrices	5	9, 11, 26	9
13	Determinants & Inverse matrices	5	9, 11, 26	9
14	Eigenvalues, Eigenvectors, & Matrix decomposition		23.1	10.1 - 10.2
15	Eigenvalues, Eigenvectors, & Matrix decomposition			10.1 - 10.2

Class	Topic	Chiang and Wainwright	Simon and Blume	Hoy et al
16	Definiteness of matrices	11.3	16, 23.8	10.3
17	Quadratic forms & Markov matrices	4.7	23.6	10.3
18	Sequences, series, & limits		12.1	3
19	Continuity	6	2.5	4
20	Derivatives for one variable	6,7.1-7.3	2.3-2.4, 2.7, 4	5
21	Higher-order derivatives	9.3 - 9.6	2.6	5
22	Partial derivatives, total derivatives	7.4-7.6, 8	14	11
23	Concavity/convexity/quasiconcavity/quasiconvexity	12.4	21, 30.2-30.3	11
24	Homogeneity, homotheticity	12.6-12.7	20	11
25	Review for mid-term			
26	Sets, mappings, and functions	2.3	A1, 12.2-12.6	2
	Midterm Exam			
27	Sets, mappings, and functions	2.4	13	2
28	Univariate optimization	9.1-9.2	3	6
29	Multivariate, unconstrained optimization	11	17	12
30	Multivariate, constrained optimization	12.1-12.5, 13.1-13.4	18	13, 15
31	Multivariate, constrained optimization	12.1-12.5, 13.1-13.4	19.3-19.6	13, 15
32	Implicit function theorem	8.5-8.6	15	14
33	Envelope theorem	13.5-14.6	19.2	14
34	Definite and indefinite integrals (univariate)	14	A4	16
35	Definite and indefinite integrals (univariate)	14	A4	16
36	Definite and indefinite integrals (multiivariate)			
37	Definite and indefinite integrals (multiivariate)			
38	Equilibrium in Markets	3		
39	Equilibrium among agents			
40	Probability rules & random variables		A5	
41	Probability models			
42	Sampling			
43	Hypothesis testing			
44	Review for final			
	Final Exam			

F. Reading List:

Students have a choice of textbooks for this class:

- Chiang and Wainwright, *Fundamental Methods of Mathematical Economics* (4th Edition), McGraw-Hill, 2005
- Hoy et al, *Mathematics for Economics* (2nd Edition), MIT Press 2001
- Simon and Blume, *Mathematics for Economists*, W.W. Norton & Company, 1994

Readings for most course topics will be assigned in all three books (see table above). Students are expected to come to class prepared, having completed one of the readings. These books will be placed on reserve in the Management and Economics Library. Students are strongly encouraged to acquire their own copy as a reference for future coursework and research. Additional readings on statistics may be provided, drawn from:

- DeVeaux, Velleman, and Bock, *Intro Stats* (2nd Edition), Pearson Addison-Wesley, 2006
- Rice, *Mathematical Statistics and Data Analysis* (3rd Edition), Thomson Brooks/Cole, 2007

For additional examples and solved problems, students may wish to consult:

- Edwards, *Introduction to Mathematical Economics* (3rd Edition), Schaum's Outlines, McGraw-Hill, 2001

G. Library Resources

Texts will be available on reserve in the Management and Economics Library. However, students will be strongly encouraged to acquire their own copy as a reference for future coursework and research.

H. Example Course Syllabus

Attached.

AGEC 516

Mathematical Tools for Agricultural and Applied Economics

Instructor: Staff
Office:
Phone:
Email:
Office Hours:

Course Information
Fall 20xx
Time: TBD
Location: TBD

Course Description

The goal of the course is to provide students with the set of mathematical tools to support graduate coursework in microeconomics, macroeconomics, economic programming, and econometrics. The course will review skills and concepts from matrix algebra, calculus, optimization theory, and mathematical statistics, with specific applications to economic theory and applied problems in agricultural economics and related fields.

In completing the course, students will:

- Understand and apply mathematical and statistical methods commonly used to build economic models;
- Become familiar with multiple math reference books; and
- Practice public speaking and peer-to-peer teaching.

Prerequisites

Students should be comfortable with introductory-level calculus.

Required Texts

Students have a choice of textbook for this class:

- Chiang and Wainwright, *Fundamental Methods of Mathematical Economics* (4th Edition), McGraw-Hill, 2005
- Hoy et al, *Mathematics for Economics* (2nd Edition), MIT Press 2001
- Simon and Blume, *Mathematics for Economists*, W.W. Norton & Company, 1994

Readings for most course topics will be assigned in all three books. Students are expected to come to class prepared, having completed one of the readings. These books are on

reserve in the library. Students, however, are **strongly** encouraged to acquire their own copy as a reference for future coursework and research.

Additional readings on statistics may be provided, drawn from:

- DeVeaux, Velleman, and Bock, *Intro Stats* (2nd Edition), Pearson Addison-Wesley, 2006
- Rice, *Mathematical Statistics and Data Analysis* (3rd Edition), Thomson Brooks/Cole, 2007

For additional examples and solved problems, students may wish to consult:

- Edwards, *Introduction to Mathematical Economics* (3rd Edition), Schaum's Outlines, McGraw-Hill, 2001

Course Requirements and Grading

Performance in this class will be based on scores from homework assignments, quizzes, tests, and bootcamp team performance with the following weightings:

Homework – 40%

Quizzes and Bootcamp team score – 5%

Midterm – 25%

Final exam – 30%

Homework: Homework will be assigned each week and must be turned in no later than 5pm on the due date. Late homework assignments will be penalized at 10% per day without prior approval from the instructor. Collaboration is allowed on assignments; however each student should submit an original write-up and indicate the names of all group members on the top right corner.

Bootcamp: The first two weeks of the course will be an algebra review (“bootcamp”) culminating in a bootcamp final quiz. Assignments during bootcamp will be purely for practice and not graded. Students will be randomly assigned to teams of 3-4 students. The team score will be the average score of all team members on the bootcamp final quiz.

Quizzes: In addition to the bootcamp final quiz, pop quizzes may be given in class at the discretion of the instructor.

Exams: The midterm will be held on **25 October 2011** from 8-9:30pm in KRAN G012. The final exam will last 2 hours and take place during finals week. Exams will be cumulative. Make up exams will not be given except in the case of prior approval from the instructor.

Policies

Academic Dishonesty

Academic dishonesty of any sort will not be tolerated. Purdue policies define dishonesty as cheating, plagiarism, knowingly furnishing false information to the University, lying, using substitutes for taking examinations, illegal cribs, copying during examinations, and/or knowingly aiding or abetting another party in committing a dishonest act (<http://www.purdue.edu/odos/aboutodos/academicintegrity.php>). If you are unsure whether your actions would be considered cheating, please ask the instructor first.

Students with Disabilities

Purdue University is required to respond to the needs of the students with disabilities as outlined in both the Rehabilitation Act of 1973 and the Americans with Disabilities Act of 1990 through the provision of auxiliary aids and services that allow a student with a disability to fully access and participate in the programs, services, and activities at Purdue University.

If you have a disability that requires special academic accommodation, please make an appointment to speak with the instructor within the first two (2) weeks of the semester in order to discuss any adjustments. It is important that we talk about this at the beginning of the semester. It is the student's responsibility to notify the Disability Resource Center (<http://www.purdue.edu/drc>) of an impairment/condition that may require accommodations and/or classroom modifications.

AGRICULTURE
Proposed Course and Curricular Changes

I. Courses to be deleted: None

II. Courses to be added:

(0-3) **AGR 29400** (Directed Readings in Agriculture, Environment, and Society)

Directed reading and discussion of books and other documents of significant importance and current interest in agriculture, food systems, renewable natural resources, and the environment. The specific topic that is considered will be indicated on the student's academic record. Fall, Spring, SS. May be repeated for a maximum of three credits.

Learning outcomes addressed include communication, critical thinking, professional development, and life-long learning.

(0-3) **AGR 49400** (Directed Readings in Agriculture, Environment, and Society)

Directed reading and discussion of books and other documents of significant importance and current interest in agriculture, food systems, renewable natural resources, and the environment. The specific topic that is considered will be indicated on the student's academic record. Fall, Spring, SS. May be repeated for a maximum of three credits.

Learning outcomes addressed include communication, critical thinking, professional development, and life-long learning.

III. Courses to be changed:

From:

(0-3) **AGR 29000** (Special Topics in Agriculture)

Presentation of subject matter not available in other courses offered by the college. The specific topic that is offered will be indicated on the student's academic record. Fall, Spring, SS. ~~May be repeated for a maximum of three credits.~~

To:

(0-3) **AGR 29000** (Special Topics in Agriculture)

Presentation of subject matter not available in other courses offered by the college. The specific topic that is offered will be indicated on the student's academic record. Fall, Spring, SS. **May be repeated for a maximum of six credits.**

IV. Curricular changes: None

AGR 29000 Readings in Agriculture, Environment and Society:
"Food Politics: What Everyone Needs To Know"

Marcos Fernandez

Office: 121 AGAD
Phone: 765-494-8472
Email: mfernandez@purdue.edu
Office Hours: Weds 2:30-3:20 PM

Course Information

Spring, 2012
Meets Tues, 3:30-5:20 PM
In AGAD Rm. 121D

Marianne S. Bracke

Office: Life Sci Library, 2400 Lilly
Phone: 765-496-9620
Email: mbracke@purdue.edu
Office Hours: Please Schedule Appt.

Course Description

AGR 29000 Special Topics in Agriculture. Credit Hours: 0.00 to 3.00. Presentation of subject matter not available in other courses offered by the college. The specific topic that is offered will be indicated on the student's academic record. Typically offered Summer, Fall, Spring. May be repeated for a maximum of 3 credits.

Specifically: ***"Read Agr, Environment & Society"* - 62366 - AGR 29000 – 007 (1 Credit Hour) Meets in AGAD 121D, Tuesdays, March 6 – May 01, 2012, 3:30 - 5:20 PM.**

Required Text

"Food Politics: What Everyone Needs to Know" by **Robert Paarlberg** (2010) 208 pp. [ISBN-13: 9780195389593]. You are strongly encouraged to purchase your own personal copy of the book (from a location or online venue of your convenience) and bring the book with you to class. Also, a copy of the book has been placed on reserve at the Life Sciences Library (LILY 2400, 765-494-2910; <http://www.lib.purdue.edu/libraries/life/>).

Chapter 01: An Overview of Food Politics

Chapter 02: Food Production and Population Growth

Chapter 03: The Politics of High Food Prices

Chapter 04: The Politics of Chronic Hunger

Chapter 05: The Politics of Famine

Chapter 06: The Green Revolution Controversy

Chapter 07: Food Aid and Food Power

Chapter 08: The Politics of Obesity

Chapter 09: The Politics of Farm Subsidies and Trade

Chapter 10: Agriculture, the Environment, and Farm Animals

Chapter 11: Agribusiness, Supermarkets, and Fast Food

Chapter 12: Organic and Local Food

Chapter 13: Food Safety and Genetically Engineered Food

Chapter 14: Who Governs the World Food System?

Prerequisites

Not applicable.

Course Goals

- (1) Critical reading of an important, timely and/or popular topic in Agriculture, Environment, and Society.
- (2) Participation in open discussion and evaluation of contemporary issues facing society in the management of food, renewable & non-renewable natural resources, environment, and communities, locally and globally.
- (3) Development of critical thinking skills across disciplines and/or topics.
- (4) Appreciation of the interconnectivity and broad factors affecting and influencing agriculture in today's world.

Learning Objectives

- (1) Develop an appreciation and understanding of the importance for the practice of critical reading.
- (2) Develop the ability to come up with questions that address the bigger/broader picture" as shared through the readings.
- (3) Clearly articulate position and/or justify and defend stand amongst one's peers.
- (4) Carefully review and consider the facts, consider and propose future directions, next steps that could be taken as a result of the readings.
- (5) Develop initial strategies to discover pertinent and reliable information to improve your understanding.

Course Requirements

Students are expected to have read assignments BEFORE coming to class (see schedule below) and come prepared to participate in group discussion.

Spring 2012 (Eight-Week) Pre-Class Reading & In-Class Discussion Schedule

March 06: Intro & Expectations to class and members. Post-read "Preface."

March 13: NO CLASS – *PURDUE'S SPRING BREAK 2012*

March 20: Pre-read Chapters 01 & 02 (pp. 1 - 19)

March 27: Pre-read Chapters 03, 04 & 05 (pp. 20 - 55)

April 03 : Pre-read Chapters 06 & 07 (pp. 56 – 80)

April 10 : Pre-read Chapters 08, 09, & 10 (pp. 81 – 126)

April 17 : Pre-read Chapters 11 & 12 (pp. 127 - 154)

April 24 : Pre-read Chapters 13 & 14 (pp. 155 – 189)

May 01 : Follow-up Summary....

Course grade will be determined on successfully reading assignments PRIOR to coming to class, sharing & briefly leading discussion on a related subject matter (external source), and each week actively engaging in class participation as determined by: (1) submission of a "major thought/question" as a result of that week's readings, 50% of total grade; (2) participation in that week's in-class discussion, 40% of total grade, determination shared equally (half each) between instructors and student participants; and (3) sharing and leading in brief discussion on a related item/topic derived from an external source (article, book, magazine, web blog, YouTube videos, etc.) 10% of grade (one assignment only).

Grading Scale for AGR 29000, Spring 2012:

90.0 – 100.0% **A**; 80.0 – 89.9% **B**; 70.0 – 79.9% **C**; 60.0 – 69.9% **D**; 00.0 – 59.9% **F**.

Overall, 90% of the course grade will be based on “class daily grade, with the remaining 10% of the course grade based on the supplemental external source assignment. Each class meeting day, a handout will contain an area where you are to briefly (2-5 sentences at most) share a readings reflection, that is, write a major theme, discovery or question that stood out from your pre-class readings (50% of class daily grade). Be willing and prepared to share with the group. Daily class discussion participation grade (50% of class daily grade) determined equally (25% each) by course instructors and student peers on a scale of: Engaged participation (“A”), Adequate participation (“B”), Marginal participation (“C”), Minimal participation (“D”), No participation or absent (“F”). [See APPENDIX below]

Course Policies

General Policies

- (1) Be attentive and engaged in in-class discussion.
- (2) Be respectful of one another’s opinions and thoughts. Challenge the readings, statements, etc., but do so in a collegial and professional manner.
- (3) Please inform instructors and fellow students if needing to arrive late or leave early – this is a group reading.
- (4) Use of cell phones/computers in class (including texting) is strongly discouraged, and will be factored into determining daily class participation/preparedness grades.
- (5) Although attempts to respond to e-mails on a timely manner, please allow instructors 48-hours in addressing/responding emails.

Academic Dishonesty

Strictly following and interpreting existing University Policy: *Purdue prohibits "dishonesty in connection with any University activity. Cheating, plagiarism, or knowingly furnishing false information to the University are examples of dishonesty." [Part 5, Section III-B-2-a, University Regulations] Furthermore, the University Senate has stipulated that "the commitment of acts of cheating, lying, and deceit in any of their diverse forms (such as the use of substitutes for taking examinations, the use of illegal cribs, plagiarism, and copying during examinations) is dishonest and must not be tolerated. Moreover, knowingly to aid and abet, directly or indirectly, other parties in committing dishonest acts is in itself dishonest."* [University Senate Document 72-18, December 15, 1972]

<http://www.purdue.edu/odos/aboutodos/academicintegrity.php>

Emergencies

Please remain in communication with your faculty (via e-mail or telephone). Strictly following and interpreting existing University Policy: *In the event of a major campus emergency, course requirements, deadlines and grading percentages are subject to changes that may be necessitated by a revised semester calendar or other circumstances beyond the instructor’s control. Relevant changes to this course will be posted onto the course website or can be obtained by contacting the instructors or TAs via email or phone. You are expected to read your @purdue.edu email on a frequent basis.*

Attendance

Strictly following and interpreting existing University Policy: *Students are expected to be present for every meeting of the classes in which they are enrolled. Only the instructor can excuse a student from a course requirement or responsibility. When conflicts or absences can be anticipated, such as for many University sponsored activities and religious observations, the student should inform the instructor of the situation as far in advance as possible...For unanticipated or emergency absences when advance notification to an instructor is not possible, the student should contact the instructor as soon as possible by email, or by contacting the main office that offers the course. When the student is unable to make direct contact with the instructor and is unable to leave word with the instructor's department because of circumstances beyond the student's control, and in cases of bereavement, the student or the student's representative should contact the Office of the Dean of Students.*

<http://www.purdue.edu/odos/services/classabsence.php>

Grief Absence Policy for Students

The existing University Policy: *Purdue University recognizes that a time of bereavement is very difficult for a student. The University therefore provides the following rights to students facing the loss of a family member through the Grief Absence Policy for Students (GAPS). GAPS Policy: Students will be excused for funeral leave and given the opportunity to earn equivalent credit and to demonstrate evidence of meeting the learning outcomes for missed assignments or assessments in the event of the death of a member of the student's family.*

Missed or Late Work

The grade in the course is based solely on class participation, so make-up work is not appropriate. Students missing class but not on official university-recognized duties/assignments, or valid personal reasons (see attendance policy above) are aware that they missed in-class discussion participation (50% of daily grade) as well as assessment of fellow classmates (25% of daily grade); could still earn remaining 25% of credit based on submission of reading thoughts/question/theme, but must be turned in within 7-days of due date.

Students with Disabilities

The existing University Policy:

Purdue University is required to respond to the needs of the students with disabilities as outlined in both the Rehabilitation Act of 1973 and the Americans with Disabilities Act of 1990 through the provision of auxiliary aids and services that allow a student with a disability to fully access and participate in the programs, services, and activities at Purdue University.

If you have a disability that requires special academic accommodation, please make an appointment to speak with me within the first three (3) weeks of the semester in order to discuss any adjustments. It is important that we talk about this at the beginning of the semester. It is the student's responsibility to notify the Disability Resource Center (<http://www.purdue.edu/drc>) of an impairment/condition that may require accommodations and/or classroom modifications.

Adverse Weather Conditions

The existing University Policy will be followed: *The University takes into consideration local and regional weather conditions, travel conditions and decisions by local school districts when deciding whether to delay, dismiss or cancel classes and/or routine operations for an entire campus due to Adverse Weather Conditions. When conditions warrant, a decision to delay, dismiss, or cancel classes and/or routine operations is coordinated with appropriate local city, county or state officials and communicated to faculty, staff and students of the affected campus. The decision to delay, dismiss or cancel classes and/or routine operations for the West Lafayette campus is made by the President and for each of the Regional Campuses it is made by the Chancellor. The President and the Chancellors will each assign a designee for such purposes to act in his or her absence.*

Please check your e-mail regularly for any weather-related updates.

<http://www.purdue.edu/policies/facilities-safety/iva6.html>

Campus Emergencies: http://www.purdue.edu/emergency_preparedness/

Nondiscrimination

The existing Purdue University Nondiscrimination Policy: *Purdue University is committed to maintaining a community which recognizes and values the inherent worth and dignity of every person; fosters tolerance, sensitivity, understanding, and mutual respect among its members; and encourages each individual to strive to reach his or her own potential. In pursuit of its goal of academic excellence, the University seeks to develop and nurture diversity. The University believes that diversity among its many members strengthens the institution, stimulates creativity, promotes the exchange of ideas, and enriches campus life.*

Purdue University prohibits discrimination against any member of the University community on the basis of race, religion, color, sex, age, national origin or ancestry, marital status, parental status, sexual orientation, disability, or status as a veteran. The University will conduct its programs, services and activities consistent with applicable federal, state and local laws, regulations and orders and in conformance with the procedures and limitations as set forth in [Executive Memorandum No. D-1](#), which provides specific contractual rights and remedies.

Violent Behavior Policy

Strictly following and interpreting existing University Policy:

Purdue University is committed to providing a safe and secure campus environment for members of the university community. Purdue strives to create an educational environment for students and a work environment for employees that promote educational and career goals. Violent Behavior impedes such goals. Therefore, Violent Behavior is prohibited in or on any University Facility or while participating in any university activity.

http://www.purdue.edu/policies/pages/facilities_lands/i_2_3.shtml and

<http://www.purdue.edu/policies/facilities-safety/iva3.html>

Class Schedule... “*Food Politics: What Everyone Needs to Know*” (2010)

Spring 2012 (Eight-Week) Pre-Class Reading & In-Class Discussion Schedule

March 06: Intro & Expectations to class and members. Post-read “Preface.”

March 13: NO CLASS – PURDUE’S SPRING BREAK 2012

March 20: Pre-read Chapters 01 & 02 (pp. 1 – 19)

Chapter 01: *An Overview of Food Politics* (1 - 7)

Chapter 02: *Food Production and Population Growth* (8 – 19)

March 27: Pre-read Chapters 03, 04 & 05 (pp. 20 – 55)

Chapter 03: *The Politics of High Food Prices* (20 – 31)

Chapter 04: *The Politics of Chronic Hunger* (32 – 45)

Chapter 05: *The Politics of Famine* (46 - 55)

April 03 : Pre-read Chapters 06 & 07 (pp. 56 – 80)

Chapter 06: *The Green Revolution Controversy* (56 – 69)

Chapter 07: *Food Aid and Food Power* (70 – 80)

April 10 : Pre-read Chapters 08, 09, & 10 (pp. 81 – 126)

Chapter 08: *The Politics of Obesity* (81 – 94)

Chapter 09: *The Politics of Farm Subsidies and Trade* (95 – 109)

Chapter 10: *Agriculture, the Environment, and Farm Animals* (110 – 126)

April 17 : Pre-read Chapters 11 & 12 (pp. 127 – 154)

Chapter 11: *Agribusiness, Supermarkets, and Fast Food* (127 – 138)

Chapter 12: *Organic and Local Food* (139 – 154)

April 24 : Pre-read Chapters 13 & 14 (pp. 155 – 189)

Chapter 13: *Food Safety and Genetically Engineered Food* (155 – 173)

Chapter 14: *Who Governs the World Food System?* (174 – 189)

May 01 : Follow-up Summary....

Please note: This syllabus and scheduled readings are subject to change.

Name: _____ Date: _____

[illegible][illegible]

Department of Agronomy
Proposed Course and Curricular Changes

A. COURSES TO BE DELETED

none

B. COURSES TO BE ADDED

AGRY 338 Environmental Hydrology Laboratory Sem. 2 Class 0, lab 3, cr. 1.

Prerequisite: AGRY 337, CE 542, ABE 325 [may be taken concurrently]

This laboratory course is designed to provide hands-on examples of the hydrologic concepts covered in the AGRY 337 Environmental Hydrology class and practical experience in hydrologic field techniques.

AGRY 641 Statistical Hydrology Sem. 2 Class 3, lab 0, cr. 3. Prerequisite: one course in hydrology; graduate level course in statistics or instructor approval

This course is designed to serve as an advanced graduate course in the statistical analysis of hydrologic data, including time series analysis and modeling, frequency analysis and uncertainty.

C. COURSES TO BE CHANGED

none

D. CURRICULAR CHANGES

none

Course To Be Added

AGRY 338 Environmental Hydrology Laboratory Sem. 02 Lab 3, cr. 1.

This laboratory course is designed to provide hands-on examples of the hydrologic concepts covered in the AGRY 337 Environmental Hydrology class and practical experience in hydrologic field techniques.

Prerequisite: AGRY 337, CE 542, ABE 325 [may be taken concurrently]

NEW COURSE DOCUMENTATION

COURSE CONTACT INFORMATION:

Name: Dr. Laura Bowling
Phone Number: 494-8051
E-mail Address: lbowling@purdue.edu
Campus Address: LILY 3-337

COURSE SUBJECT ABBREVIATION AND NUMBER: AGRY 33800

COURSE TITLE: Environmental Hydrology Laboratory

COURSE CREDITS AND INSTRUCTIONAL TYPE: Sem. 2. Lab 3, Cr. 1

COURSE DESCRIPTION: This laboratory course is designed to provide hands-on examples of the hydrologic concepts covered in the AGRY 337 Environmental Hydrology class and with practical experience in hydrologic field techniques.

A. Justification:

This course is an important addition to the undergraduate curriculum because there has not recently been an undergraduate laboratory that covers field methods in the hydrologic sciences. The majority of water related courses on campus are either class room based or offer an analytical laboratory component. There has been a serious lack of training of the applied aspects of water science. This class will provide marketable skills needed for future careers with the USGS, NRCS and consulting services.

Course History:

As summarized in Table 1, the Environmental Hydrology Laboratory has been offered two times separately from the AGRY 337 Environmental Hydrology class with enrollment between 5 and 8 students. Prior to Spring 2011, laboratory exercises were included as part of the AGRY 337 course. In Spring 2010, this was through a formal change in course structure (2 hours of lecture

and 3 hours of lab per week). For 2005-2010, laboratory exercises were incorporated into course content through voluntary field trips.

Table 1: Enrollment in the AGRY Environmental Hydrology Laboratory

Course	Semester	Enrollment
AGRY 399 Environmental Hydrology Lab	Spring 2011	5
AGRY 399 Environmental Hydrology Lab	Spring 2012	8

Sequence with Existing Courses:

The only prerequisite is that students must take an undergraduate hydrology class previously or concurrently to this course, including AGRY 337, CE 542 or ABE 325. The lab follows the sequence of material offered in the AGRY 337 Environmental Hydrology class, but is offered as an independent course open to all students who may desire an additional experiential component to their hydrology training. As such, it should be of interest to natural science students in a variety of disciplines, including Agronomy; Civil and Agricultural and Biological Engineering; Forestry and Natural Resources; NRES and Earth and Atmospheric Sciences.

B. College Learning Outcomes Addressed by This Course

- ☒ **Professional Preparation:** Demonstrate proficiency in their chosen discipline that incorporates knowledge skills, technology, and professional conduct.
- ☒ **Scientific Principles:** Demonstrate use of the scientific method to identify problems, formulate and test hypotheses, conduct experiments and analyze data, and derive conclusions.
- ☒ **Critical Thinking:** Demonstrate critical thinking by using data and reasoning to develop sound responses to complex problems.
- ☒ **Communication:** Demonstrate the ability to write and speak with effectiveness while considering audience and purpose.
- ☒ **Teamwork:** Demonstrate the ability to work effectively as part of a problem-solving team.
- ☐ **Cultural Understanding:** Demonstrate knowledge of a range of cultures and an understanding of human values and points of view of other than their own.
- ☐ **Social Science Principles:** Demonstrate ability to apply social, economic, political, and environmental principles to living in a global community.
- ☐ **Civic Responsibility:** Demonstrate awareness of civic responsibility to community and society at large.
- ☒ **Lifelong Learning:** Demonstrate skills necessary for lifelong learning.

C. Learning Outcomes and Method of Evaluation or Assessment

Learning Outcomes:

- Enhanced understanding of physical, chemical and biological hydrological processes.
- Development of critical thinking skills and the application of field methods and instrumentation used in evaluating hydrologic processes.
- Development technical communication skills and problem solving abilities on topics related to surface water hydrology.
- Encouragement of lifetime learning habits through practical problem solving.

Grades for this course will be based on participation in the laboratory exercises and completion of the assigned laboratory reports. The total number of points is assigned as follows:

AGRY 399 Grading System	(Approximate Point Distribution)
Lab participation (14 sessions)	140 points (10 points each)
Lab reports (13)	260 points (20 points each)
Total	400 points

Course grades will be assigned according to the percent of the total points earned. Students who earn 90% of the total points in the course will be guaranteed to receive an A-, 80% a B-, 70% a C-, 60% a D-, and less than 60% an F. The instructor reserves the right to lower the cut off percentages for grades.

D. Pre-requisites: AGRY 337, CE 542, ABE 325 [may be taken concurrently]

E. Course Instructor(s): Dr. Laura Bowling

F. Course Outline of Topics/Syllabus:

Purdue University Department of Agronomy

AGRY 399 Environmental Hydrology Lab, Spring 2012

Th 2:30 – 5:20 pm

Course Description: This laboratory course is designed to provide you with both hands-on examples of the hydrologic concepts covered in the AGRY 337 Environmental Hydrology class and with practical experience in hydrologic field techniques. The class is available to students enrolled concurrently or previously in an introductory hydrology class, include AGRY 337, CE 542 and ABE 325.

Course Objectives:

- Understand physical, chemical and biological hydrological processes.
- Develop a working knowledge of the methods and instrumentation used in evaluating hydrologic processes.
- Develop technical communication skills and problem solving abilities on topics related to surface water hydrology.

Instructor Information:

Instructor: Dr. Laura Bowling

Office: LILY 3-337

Phone: 49-48051

E-mail: bowling@purdue.edu

TA: Ms. Chun-mei Chiu

Office: LILY 3-201

Phone: 49-69522

E-mail: chiuc@purdue.edu

Course Delivery:

Class Website: AGRY 399 has a website on Blackboard Vista. The website will primarily be used to provide copies of laboratory hand-outs, and supplemental readings. Your grades will also be posted on the site.

Hand-outs: Laboratory background and instructions are provided in the printed lab manual and will be posted on the class Blackboard website. The notes will provide the detailed methods for completing the lab exercise, but supplementary material may be required for satisfying all requirements of the laboratory report.

Grading, Testing, and Student Evaluation Procedures:

Expectations: Attendance at lab is required. Please notify Dr. Bowling by phone or email if you have a contagious illness and are unable to attend. Be prepared to work outside for most of the 3-hour period, even in snow or rain. It will be cold for much of the semester!

Grading: Your overall grade will be based on your participation in the laboratory exercises and completion of the assigned laboratory reports. The total number of points is subject to change, but should not be substantially different.

AGRY 399 Grading System	(Approximate Point Distribution)
Lab participation (14 sessions)	140 points (10 points each)
Lab reports (13)	260 points (20 points each)
Total	400 points

Course grades will be assigned according to the percent of the total points earned. Students who earn 90% of the total points in the course will be guaranteed to receive an A-, 80% a B-, 70% a C-, 60% a D-, and less than 60% an F. The instructor reserves the right to lower the cut off percentages for grades.

Lab Reports:

Assignment Due Dates: Required questions and calculations specific to each laboratory are in the lab manual; any modifications will be distributed in class on the day of the lab and the report will usually be due one week later, as indicated in the Class Schedule. Typed reports should follow the provided Laboratory Report Outline. Partial credit will be given for numerical problems, so all work should be shown. 50% of the total points will be deducted from any numerical answer that does not include appropriate units. Late reports papers will be penalized 10% per day unless a valid excuse is presented.

Honesty Policy: Students will often work on teams to collect the measurements; however each student is expected to complete his or her own laboratory report. Any outside sources used in the laboratory report must be properly referenced. If a student directly quotes or paraphrases another author or source, the student must cite the material. Academic dishonesty (i.e. plagiarism) will result in a zero grade for the assignment, possible failure of the course, and reporting of the incident to the Dean of Students for further action.

Class Schedule and Assignment Sheet

Date	Subject	Lab Location	Lab Report Due Dates
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Jan 12	Introduction	Beering B238	
Jan 19	Lab 1: Weather measurement	ACRE	
Jan 26	Lab 2: Snow surveys	ACRE	Lab Report 1
Feb 2	Lab 3: Soil frost	ACRE/ASREC	Lab Report 2
Feb 9	Lab 4: Runoff and infiltration	NSERL	Lab Report 3
Feb 16	Lab 5: Soil water properties	NSERL/Lilly 3-419	Lab Report 5
Feb 23	Lab 6: Watershed delineation	Lilly 3-419	Lab Report 4
Mar 1	Lab 7: River gauging	Davis Ferry Park	Lab Report 6
Mar 8	Lab 8: Wetland identification	Celery Bog	Lab Report 7
Mar 15	Spring Break; no lab		
Mar 22	Lab 9: Hydrogeology: piezometers and conductivity –Week1	Oak's Woods Wetland	Lab Report 8
Mar 29	Lab 10: Hydrogeology: piezometers and conductivity –Week 2	Oak's Woods Wetland	Lab Report 9
Apr 5	Lab 11: Stream geomorphology	Martell Forest	Lab Report 10
Apr 12	Lab 12: Soil moisture and landscape position	TBD	Lab Report 11
Apr 19	Lab 13a: Drainage and water quality – Week 1	TPAC	Lab Report 12
Apr 26	Lab 13b: Drainage and water quality – Week 2	ABE	
May 3			Lab Report 13

This class schedule is subject to change due to weather conditions. You will receive email notification from the TA each week regarding the meeting location and appropriate gear (i.e. outdoor gear, rubber boots, etc.). When we are travelling off-campus, we will meet in the parking lot at the west end of Lily Hall before going to the field sites.

In the event of a major campus emergency, course requirements, deadlines and grading percentages are subject to changes that may be necessitated by a revised semester calendar or other circumstances. Information regarding such changes in this course will be available via the Blackboard Vista web page and email (bowling@purdue.edu).

G. Reading List/Textbook: Lab manual prepared by the instructor.

Course To Be Added

AGRY 641 Statistical Hydrology Sem. 2 Class 3, cr. 3.

This course is designed to serve as an advanced graduate course in the statistical analysis of hydrologic data, including time series analysis and modeling, frequency analysis and uncertainty.

Prerequisites: one course in hydrology, graduate level course in statistics or instructor approval

NEW COURSE DOCUMENTATION

COURSE CONTACT INFORMATION:

Name: Dr. Laura Bowling
Phone Number: 494-8051
E-mail Address: lbowling@purdue.edu
Campus Address: LILY 3-337

COURSE SUBJECT ABBREVIATION AND NUMBER: AGRY 64100

COURSE TITLE: Statistical Hydrology

COURSE CREDITS AND INSTRUCTIONAL TYPE: Sem. 2. Class 3, Cr. 3

COURSE DESCRIPTION: This course is designed to serve as an advanced graduate course in the statistical analysis of hydrologic data, including time series analysis and modeling, frequency analysis and uncertainty.

A. Justification:

This class is designed to replace an existing civil engineering class (CE 641 Statistical Hydrology) that has not been offered in several years following the retirement of the lead instructor. This course has the support of the Civil Engineering faculty, and it is hoped that in the future it will be cross-listed between Agronomy and Civil Engineering. It serves as an advanced graduate course in the statistical analysis of hydrologic data, including time series analysis and modeling, frequency analysis and uncertainty, emphasizing the unique aspects of hydrologic and other earth science time series and the specific statistical techniques used to quantify hydrologic change.

Course History:

As summarized in Table 1, the Statistical Hydrology class has been offered in most years since Spring 2005 with enrollment between 6 and 12 students.

Table 1: Enrollment in the AGRY Statistical Hydrology Class

Course	Semester	Enrollment
AGRY 598 Advanced Topics in Hydrology	Spring 2006	6
AGRY 598 Advanced Topics in Hydrology	Spring 2007	9
AGRY 598 Advanced Topics in Hydrology	Spring 2008	12
AGRY 598 Advanced Topics in Hydrology	Spring 2010	6
AGRY 598 Advanced Topics in Hydrology	Spring 2011	12
AGRY 598 Statistical Hydrology	Spring 2012	10

Sequence with Existing Courses:

This class is not intended to be either a first class in hydrology or a first class in statistics, therefore there are prerequisites in both areas. Matlab training in the form of five computer lab exercises is offered as part of the course, so there is no formal prerequisite for knowledge of Matlab. Students may use any computational software for completion of the assignments. This class can form part of a logical sequence following other introductory hydrology courses on campus, including AGRY 337, CE 542 or ABE 325. It forms part of a core curriculum for graduate studies in hydrology on campus, together with ABE 522 Ecohydrology; CE 544 Subsurface Hydrology; CE 549 Computational Hydrology and CE 697 Advanced Computational Hydrology. As such, it should be of interest to hydrology students in Agronomy; Civil and Agricultural and Biological Engineering; and Earth and Atmospheric Sciences.

B. College Learning Outcomes Addressed by This Course

- ☒ **Professional Preparation:** Demonstrate proficiency in their chosen discipline that incorporates knowledge skills, technology, and professional conduct.
- ☒ **Scientific Principles:** Demonstrate use of the scientific method to identify problems, formulate and test hypotheses, conduct experiments and analyze data, and derive conclusions.
- ☒ **Critical Thinking:** Demonstrate critical thinking by using data and reasoning to develop sound responses to complex problems.
- ☒ **Communication:** Demonstrate the ability to write and speak with effectiveness while considering audience and purpose.
- ☐ **Teamwork:** Demonstrate the ability to work effectively as part of a problem-solving team.
- ☐ **Cultural Understanding:** Demonstrate knowledge of a range of cultures and an understanding of human values and points of view of other than their own.
- ☐ **Social Science Principles:** Demonstrate ability to apply social, economic, political, and environmental principles to living in a global community.

x **Civic Responsibility:** Demonstrate awareness of civic responsibility to community and society at large.

x **Lifelong Learning:** Demonstrate skills necessary for lifelong learning.

C. Learning Outcomes and Method of Evaluation or Assessment

Learning Outcomes:

- Enhanced understanding of statistical methods used for hydrologic design, standard time-series methods applied to the modeling of hydrologic variables and uncertainty techniques.
- Development of critical thinking skills relating observed statistical properties of hydrologic data to physical generation processes.
- Development technical communication skills and problem solving abilities on topics related to surface water hydrology and environmental change.
- Encouragement of lifetime learning habits through development of a suite of research tools to analyze hydrologic change.

Method of Evaluation:

Grades for this course will be based on class participation, six assignments that cover the analysis methods learned in class, and computer laboratory exercises (MATLAB). Assignments 1-5 can be re-submitted following corrections. Course grades will be assigned according to the percent of the total points earned following re-submission.

The class participation grade will be based on active engagement in the class discussions based on assigned readings and in completion of one current event in hydrology presentation. Presentations take place at the “top of the hour” to provide a break in the one and a quarter hour session.

AGRY 598 Grading System	(Approximate Point Distribution)
Class Participation	75 points
Matlab hand-ins (5)	75 points each
Assignments 2, 5	100 points each
Assignments 1, 3, 4, 6	75 points each
Total	650 points

Students who earn 90% of the total points in the course will be guaranteed to receive an A-, 80% a B-, 70% a C-, 60% a D-, and less than 60% an F. The instructor reserves the right to lower the cut off percentages for grades.

D. Pre-requisites: one course in hydrology; one graduate level course in statistics or instructor approval

E. Course Instructor: Dr. Laura Bowling

F. Course Outline of Topics/Syllabus:

**Purdue University
Department of Agronomy**

AGRY 598 Advanced Topics in Hydrology, Spring 2012

Beering 1-222, TTh 10:30 - 11:45 am

Course Description: This course is designed to serve as an advanced graduate course in the statistical analysis of hydrologic data, including time series analysis and modeling, frequency analysis and uncertainty. Prerequisites include an undergraduate class in hydrology, water conservation or water resources (e.g. AGRY 337, CE 542), and STAT 511 or an equivalent. This class should be of interest to graduate students in a variety of water-related disciplines, including Agronomy; Forestry and Natural Resources; Civil Engineering, Earth and Atmospheric Sciences; and Agricultural and Biological Engineering.

Course Objectives:

- Become familiar with statistical methods used for hydrologic design, standard time-series methods applied to the modeling of hydrologic variables and uncertainty techniques.
- Relate observed statistical properties of hydrologic data to physical generation processes.
- Develop a suite of research tools to analyze hydrologic change in response to environmental changes.

Instructor Information:

Instructor: Dr. Laura Bowling

Office: LILY 3-337

Phone: 494-8051 (office)

E-mail: bowling@purdue.edu

Availability: If my office door is open, feel free to stop by with any questions about the course, homework or readings. However, I am often not in my office and email is often the best way of contacting me.

Recommended Text:

Box, G.E.P and G.M. Jenkins, Time Series Analysis, Forecasting and Control, Holden-Day, San Francisco, 553 p., 1970. [Multiple copies available through Purdue libraries.]

Chow, V.T., D.R. Maidment, and L.W. Mays. Applied Hydrology, McGraw-Hill, 572 p., 1988. [Textbook for CE 542 class.]

Helsel, D.R. and R.M. Hirsch, Statistical Methods in Water Resources, Elsevier, Amsterdam 510 p. , 1992. [Available electronically through Blackboard.]

Readings from a variety of sources (book chapters and journal articles) will also be distributed in class and via Blackboard Vista. The following books provide good general reference for many of the topics to be covered in class.

Bras, R.L. and I. Rodriguez-Iturbe, Random Functions and Hydrology, Addison-Wesley Publishing Company, Reading, MA, 559 p., 1985.

Haan, Charles T., Statistical Methods in Hydrology 2nd Edition, Iowa State Press, 496 p., 2002. ISBN 0-8138-1503-7

Maidment, D.R., 1993, Handbook of Hydrology, McGraw-Hill Inc, New York.

McCuen, Richard H., Modelling Hydrologic Change Statistical Methods, CRC Press, Boca Raton, FL, 433 p., 2003.

Salas, J.D., J.W. Delleur, V. Yevjevich and W.L. Lane, Applied Modelling of Hydrologic Time Series, Water Resources Publications, Littleton, CO, 484 p., 1980.

Class Website: AGRY 59800-0052 has a website on Blackboard. The website will primarily be used to provide copies of class lecture notes, assignments and supplemental readings. Grades will also be posted on the site.

Grading, Testing, and Student Evaluation Procedures:

There will be no formal examinations for this class. There will be six assignments to illustrate the analysis methods learned in class, not all assignments have equal weight. Assignments 1-5 can be re-submitted following corrections. Course grades will be assigned according to the percent of the total points earned following re-submission.

Reading Assignments and Class Participation: Reading assignments will either be handed out in class or posted on the class website. The assignments should be read prior to class and you should come to class prepared to discuss the readings. The class participation grade will be based on active engagement in the class discussions and in completion of one current event presentation.

AGRY 598 Grading System	(Approximate Point Distribution)
Class Participation	75 points
Matlab hand-ins (5)	75 points each
Assignments 2, 5	100 points each
Assignments 1, 3, 4, 6	75 points each
Total	650 points

Students who earn 90% of the total points in the course will be guaranteed to receive an A-, 80% a B-, 70% a C-, 60% a D-, and less than 60% an F. The instructor reserves the right to lower the cut off percentages for grades.

Honesty Policy: Students may consult with one another regarding completion of the assignments; however each student is expected to turn in his or her own work. Any outside sources used must be properly referenced in the style used by major journals in your field of study. Academic dishonesty (i.e. plagiarism) will result in a zero grade for the assignment, possible failure of the course, and reporting of the incident to the Dean of Students for further action.

Preliminary Class Schedule

Date	Topic	Reference Chapters	Top of the Hour	Assignment due dates
Jan 10	Unit 1: Introduction Hydrologic time series	H & H, Chap. 1 & 2	Current Event 1	
12	Summarizing Data		Who's Who 1	
17	Graphical Data Analysis		Current Event 2	
19	Matlab Session I (Brng B291)			
24	Unit 2: Flood Frequency Analysis Properties of Random Variables	Chow, Chap. 11 & 12	Current Event 3	<i>Matlab hand-in 1</i>
26	Parameter Estimation		Who's Who 2	
31	Probability Plotting		Current Event 4	<i>Assignment 1</i>
Feb 2	Matlab Session II (Brng B291)			

7	Frequency Factors		Current Event 5	<i>Matlab hand-in 2</i>
9	Confidence Intervals	H & H, Chap. 3	Who's Who 3	
14	Goodness-of-fit		Current Event 6	
16	Unit 3: Time Series Structure		Who's Who 4	
21	Tests for shifts in moments	H&H, Chap. 4-6	Current Event 7	<i>Assignment 2</i>
23	Tests for trends	H&H, Chap 8 & 12	Who's Who 5	
28	Matlab Session III (Brng B286)			
Mar 1	Pre-whitening and seasonality		Who's Who 6	<i>Matlab hand-in 3</i>
6	Unit 4: Frequency Domain Periodicity	Box, Chap. 2	Current Event 8	
8	Spectral density		Who's Who 7	<i>Assignment 3</i>
13	Spring Break; no class			
15				
20	Filtering		Current Event 9	
22	Matlab Session IV (Brng B291)			
27	Unit 5: Time Series Modeling Yule-Walker	Box, Chap. 3 & 6	Current Event 10	<i>Matlab hand-in 4</i>
29	Annual (stationary) models		Who's Who 8	<i>Assignment 4</i>
Apr 3	Data generation		Current Event 11	
5	Matlab Session V (TBA)			
10	Model identification	Box, Chap. 4 & 9	Current Event 12	<i>Matlab hand-in 5</i>
12	Seasonal and nonstationary models		Who's Who 9	
17	Unit 6: Hydrologic forecasting	Box, Chap. 5	Current Event 13	<i>Assignment 5</i>
19	Kalman Filters		Who's Who 10	
24	Review & discussion			
26	Final presentations			<i>Assignment 6</i>

In the event of a major campus emergency, course requirements, deadlines and grading percentages are subject to changes that may be necessitated by a revised semester calendar or other circumstances. Information regarding changes in this course will be available via the Blackboard Vista web page, email (bowling@purdue.edu), and my office phone: 494-8051.

G. Reading List/Textbook:

Recommended Text:

Box, G.E.P and G.M. Jenkins, Time Series Analysis, Forecasting and Control, Holden-Day, San Francisco, 553 p., 1970. [Multiple copies available through Purdue libraries.]

Chow, V.T., D.R. Maidment, and L.W. Mays. Applied Hydrology, McGraw-Hill, 572 p., 1988. [Textbook for CE 542 class.]

Helsel, D.R. and R.M. Hirsch, Statistical Methods in Water Resources, Elsevier, Amsterdam 510 p. , 1992. [Available electronically through Blackboard.]

Readings from a variety of sources (book chapters and journal articles) will also be distributed in class and via Blackboard Vista. The following books provide good general reference for many of the topics to be covered in class.

Bras, R.L. and I. Rodriguez-Iturbe, Random Functions and Hydrology, Addison-Wesley Publishing Company, Reading, MA, 559 p., 1985.

Haan, Charles T., Statistical Methods in Hydrology 2nd Edition, Iowa State Press, 496 p., 2002. ISBN 0-8138-1503-7

Maidment, D.R., 1993, Handbook of Hydrology, McGraw-Hill Inc, New York.

McCuen, Richard H., Modelling Hydrologic Change Statistical Methods, CRC Press, Boca Raton, FL, 433 p., 2003.

Salas, J.D., J.W. Delleur, V. Yevjevich and W.L. Lane, Applied Modelling of Hydrologic Time Series, Water Resources Publications, Littleton, CO, 484 p., 1980.

**Department of Animal Sciences
Proposed Course and Curricular Changes**

A. COURSES TO BE DELETED

None

B. COURSES TO BE ADDED

ANSC 55600 Stem Cell Biology

ANSC 49400 Animals and Food Security: International Service Learning

C. COURSES TO BE CHANGED

None

D. CURRICULAR CHANGES

None

Course To Be Added

ANSC 55600 Stem Cell Biology. Sem. 1. Class 3, cr. 3.

Adult or tissue stem cells are stem cells that reside in different tissues and, depending on where they are from, have different properties. This dual level course aims to cover the origin, identification, isolation, differentiation, self-renewal, and senescence of various tissue-specific stem cells and their function in animal tissue growth and maintenance. The course will focus on the latest advances in adult stem cells and their applications in tissue regeneration.

Prerequisites: BCHM 30700, BIOL 23100 and (BIOL 24100 or AGRY 32000)

Restrictions: None

NEW COURSE DOCUMENTATION

COURSE CONTACT INFORMATION:

Name: Dr. Shihuan Kuang
Phone Number: 494-8283
E-mail Address: skuang@purdue.edu
Campus Address: SMTH 174B

COURSE SUBJECT ABBREVIATION AND NUMBER: ANSC 55600

COURSE TITLE: Stem Cell Biology

COURSE CREDITS AND INSTRUCTIONAL TYPE: Sem. 1. Class 3, cr. 3.

COURSE DESCRIPTION: Adult or tissue stem cells are stem cells that reside in different tissues and, depending on where they are from, have different properties. This dual level course aims to cover the origin, identification, isolation, differentiation, self-renewal, and senescence of various tissue-specific stem cells and their function in animal tissue growth and maintenance. The course will focus on the latest advances in adult stem cells and their applications in tissue regeneration.

H. Justification:

Stem cell research is one of the most active and hottest research areas in life sciences. Unfortunately, Purdue University has not yet offered a comprehensive stem cell biology course. The proposed "Stem Cell Biology" course aims to fill the gap by introducing basic knowledge as well as exciting frontier research in stem cells. The course will provide students with a basic understanding of the various stem cells found in animal tissues. The course also gives the students the opportunity to study current research strategies involving novel molecular and genetic techniques used to manipulate stem cells in order to enhance animal growth in agriculture and tissue regeneration in human diseases.

Level of Course: 25% anticipated enrollment of upper division students (seniors) and 75% anticipated enrollment of graduate students.

The course has been taught twice as a temporary course (ANSC 59500) in 2010 and 2011. It was very well received (based on students' enthusiastic evaluations) in both years. Sixteen students (13 graduate + 3 undergraduate seniors) from 4 colleges were enrolled in 2010. Ten students (9 graduate and 1 undergraduate) from three colleges were enrolled in 2011.

B. Learning Outcomes and Method of Evaluation or Assessment

Learning outcomes:

- Present students with a basic understanding of the defining features of stem cells and appreciation of the diversity of various types of stem cells;
- Provide a forum for discussion of current research in stem cell biology and its applications to animal production and human health;
- Give the students opportunities to read and evaluate research papers, orally present current research and participate in discussions of the results.

Methods of evaluation or assessment:

Grades for the course will be based on two middle term exams and a final exam, plus an oral presentation and participation in discussion during student presentation. Each student will give a 45 minute presentation on one of the topics listed in **E** below. The presentations will focus on a primary research paper from the current literature along with related background information. The students in the audience are expected to have read the paper before class and submit 2-3 written questions before class. All students are expected to participate in discussions by asking questions and evaluating the oral presentations on a written form prepared by the instructor.

Participation in discussion	20% (based on written questions, oral questions/comments, evaluation)
Oral presentation	15% (Appendix I: grading form, graded by students and the instructor)
Written essay	15% (Appendix II: written essay requirements)
Exam 1	15%
Exam 2	15%
<u>Final exam</u>	<u>20%</u>
Total	100%

Grading scales:

A+	> 96
A	93-96
A-	90-92
B+	87-89
B	83-86
B-	80-82
C+	77-79
C	73-76
C-	70-72
D+	67-69
D	63-66
D-	60-62
F	< 60

C. Prerequisites: BCHM 30700, BIOL 23100 and BIOL 24100 or AGRY 32000

D. Course Instructor(s): Dr. Shihuan Kuang

E. Course Outline of Topics/Syllabus:

Each topic is a 75 minute lecture; topic 5-17 involves additional paper discussion

1. Introduction to stem cells and regenerative medicine
2. Embryonic vs. adult stem cells
3. Stem cell research ethics and techniques
4. Stem cell pluripotency, self-renewal and differentiation
5. Reprogramming somatic cells into pluripotent stem cells
6. Epigenetic regulation of stem cells
7. Hematopoietic stem cells (Exam #1, 30 minutes)

8. Mesenchymal stem cells
9. Cardiac muscle stem cells
10. Skeletal muscle stem cells
11. Adipose (brown and white fat) stem cells
12. Germ line stem cells (Exam #2, 30 minutes)
13. Pancreatic and liver stem cells
14. Neural (including retinal) stem cells
15. Epithelial (corneal, hair follicle and intestinal) stem cells
16. Mammary stem cells
17. Cancer stem cells and immortal DNA strand hypothesis
18. Stem cells and tissue engineering
19. Final Exam

F. Reading List/Textbook:

Lectures will be drawn from current literature. A primary reading list of research articles, review articles and book chapters will be given for each topic. The students are responsible for the material contained in the primary reading list. In addition to the primary reading list, a secondary reading list will be provided to the class for students who are interested in obtaining additional information about a particular topic or related areas of research.

G. Library Resources

The following textbook will be placed on reserve in the library for use as the general reference.

Essentials of Stem Cell Biology, 2nd edition (2009). Robert Lanza, et al. Academic Press.
Principles of regenerative medicine/Anthony Atala, ... [et al.], [eds.].
ISBN: 9780123694102 - 0123694108
Description: Book

H. Example of a Course Syllabus (optional)

ANSC 55600 Stem Cell Biology Presentation Evaluation Form

Speaker:

Evaluator:

Paper Title:

Scores (Total = 100)

Difficulty level of the presented paper (10)

Title/Introduction/Background/Objective (15)

Title & Author information; background knowledge necessary for the audience to understand this study and explain why the study is undertaken (rationale).

Diagrams and figures from other review papers are welcome here. What are the specific objectives and/or the hypothesis?

Experimental Design (15)

Materials and Methods used, and the rationale of experimental design, any flaws in the design? Again, diagrams are welcome. Some information may be presented later in combination with the results.

Results & interpretations (25)

What are the main results and authors' interpretations? Potential misinterpretations, for example alternative possibilities.

Conclusions & Significance (5)

Summarize the main conclusions and the potential impact in the field

Preparedness & speaker traits (10)

Timing, quality of the PowerPoint slides, ability to stimulate discussions, professional presentation style and communication skills (eye contact, body language, pointer usage, effectiveness)

Speaker's overall understanding of the material presented (20)

Does the speaker seem to know what he/she is talking about? How well did the presenter answer questions?

Comments (write on the back of the page if you need more space):

Appendix II

ANSC 55600 Stem Cell Biology Written Essay Instructions

1. Sample essays will be provided and posted on the blackboard.
2. The essay is based on the primary research paper that you presented in the class. It can be comprised of:
 - 5% Abstract (a paragraph of why, what, then what, so what?)
 - 15% Background and questions examined (~1 page)
 - 60% Review of the paper including your critiques; summarizing diagrams/tables are highly encouraged (2-3 pages)
 - 10% Significance/outstanding questions/future direction (~ 0.5 page)
 - 10% Style (references and grammar will be graded here)

It should be typed in 12 pt. font, single space, 1" margin all around.

Maximum 5 pages, excluding references which should be placed at the end on separate pages.

3. What do I look for?

Your understanding of:

- The current status of the field and the rationale of the study;
- The paper being discussed and critiques (how it was done, what did they found, what's their interpretation, what did you think about their results?);
- The big picture;
- Proper formatting, citation and scientific writing style.

Course To Be Added

ANSC 49400 Animals & Food Security: International Service Learning Sem. 1, 2, SS. cr. 1-4.

This course prepares students for a service learning international experience and includes the planning of the trip, the actual trip and a reflective learning post-trip class. The course is a partnership between Purdue Animal Sciences, a host university and their students, a local community organization, and an international community development, NGO. The core of the experience is the faculty-led international service learning course where students live and work in villages in a developing country. Students will learn extension methodologies and how to contribute to sustainable community projects through the application of agricultural ecology, animal well-being focused management, and community development projects. Students will be expected to work in bi-national teams across agricultural and community disciplines to not only contribute to the communities served but to apply their classroom knowledge and experience to make a difference in the community. AGECE 34000 (Introduction to World Agricultural Development) is a highly recommended prerequisite.

Prerequisites: Multicultural Awareness course (COA list)

Restrictions: Classification 5-8

NEW COURSE DOCUMENTATION

COURSE CONTACT INFORMATION:

Name: Paul Ebner,
Phone Number: 4-4820

E-mail Address: pebner@purdue.edu

Campus Address: LILY 3-230

Mark Russell
4-7677

mrussell@purdue.edu

POUL 111

COURSE SUBJECT ABBREVIATION AND NUMBER: ANSC 49400

COURSE TITLE: Animals & Food Security: International Service Learning

COURSE CREDITS AND INSTRUCTIONAL TYPE: Sem. 1, 2, SS. Class 1 or 2, cr. 1-4.

COURSE DESCRIPTION: This course prepares students for a service learning international experience and includes the planning of the trip, the actual trip and a reflective learning post-trip class. Based on faculty contacts and relationships, this course partners with a host university and their students, a local community organization, and an international community development NGO and focuses on food animal production and community development. The core of the experience is the faculty-led international service learning course to study and work in villages in a developing country. Students learn to contribute to sustainable community projects through application of extension methodologies, agricultural ecology, animal well-being focused management, and community development projects. Students work in bi-national teams across agricultural and community disciplines to not only contribute to the communities served, but to apply their classroom knowledge and experience to make a difference in the community. AGECE 34000 (Introduction to World Agricultural Development) is a highly recommended prerequisite.

I. Justification:

Purdue Animal Sciences is seeking additional ways to develop the expected learning outcomes of the COA and the Department in the context of team-building applying gained knowledge to solving real world grand challenges. The reciprocity required in a service learning model ensures that these students acquire new skills and knowledge while providing a value-added service or outcome for the host community and university. Some students seek the opportunity to

apply their coursework to real-world challenges which allow them to use their knowledge and skills to actually contribute and make a difference to society. The sequence of thorough preparation for the service project and the reflection of culture and subject matter content serves to frame the actual work and trip in an experience of academic learning.

ANSC 49500 Animals & Food Security: International Service Learning has been taught as a temporary course during the Summer 2010, Spring 2011, Summer 2011, Fall 2011 and Spring 2012 semesters. When the students traveled to Romania during Maymester (3 credits), they had taken a pre-planning trip during the preceding spring semester (1 credit). When the students traveled to Haiti during winter break, they registered for a one credit pre-planning trip during the fall semester, a one credit study abroad course to cover the time they are in Haiti and a one credit post-reflective trip course during the spring semester. Future trips to Brazil and China are being planned and credit will be configured similarly to the previous trips to Romania and Haiti.

Level of Course: 90% anticipated enrollment of juniors and seniors

B. Learning Outcomes and Method of Evaluation or Assessment

Learning outcomes:

- o Professional Preparation: Demonstrate proficiency in the application of the knowledge, skills, technology, extension methodology, and professional conduct of animal sciences.
- o Critical Thinking: Demonstrate critical thinking by using data and reasoning to develop sound responses to complex problems in a rural international village setting.
- o Communication: Demonstrate the ability to write and speak with effectiveness while considering audience and purpose.
- o Teamwork: Demonstrate the ability to work effectively as part of a bi-national problem-solving team.
- o Cultural Understanding: Demonstrate actual intercultural skills and knowledge of a range of cultures and an understanding of human values and points of view of other than their own.
- o Social Science Principles: Demonstrate ability to apply social, economic, political, and environmental principles to serving an international rural village.
- o Civic Responsibility: Demonstrate awareness of civic responsibility to community and society at large.

Methods of evaluation or assessment:

Part I – Pre-planning trip to Romania (1 credit)

Assignments: Preparation Course

Professional Presence & Participation - 10%

Attendance – There is no single textbook or source of information. The instructors and students will be gathering and sharing information. The only way that a student can learn and grow in this environment is to be present and actively involved.

Participation and Reports - 60%

Topical Research responsibility – Each student will develop and present two fact sheets for sharing with all students via BlackBoard

- Fact Sheet One: 20%
- Fact Sheet Two: 20%
- Presentation One: 10%
- Presentation Two: 10%

Study Topics Fact Sheets

During the preparation semester, each student will prepare two fact sheets to share with fellow students. These two-page, narrative, information sheets will be posted on BlackBoard and the course webpage for shared use and learning about Romania. These fact sheets will be presented and discussed in class. Each student will prepare one fact sheet from the list of topics on political, economic and social structure of the host country and one fact sheet from the list of topics on agricultural systems in the host country. Finished fact sheets must have the topic name, the author and date

centered in bold, 12 size Arial font and the paper single-spaced in two columns with pictures, graphs, etc., to tell the relevant highlights.

Each student will present their research to the class. These will be five minute PowerPoint presentations (maximum 6 slides).

A draft of the political, economic and social topic paper is due with the final paper to be uploaded onto Blackboard. A draft of the agricultural systems topic paper is due with the final paper to be uploaded onto Blackboard.

Example of Factsheet/Presentation Topics

<i>Political, Economic and Social Structure</i>	<i>Romanian Agricultural Systems</i>
1. Romanian History: pre-1939 2. Romanian History: 1939-1989 3. 1989 Romanian Revolution 4. Romanian History: 1989-Present 5. The European Union & Romania member 6. Current Economic Climate in Romania 7. Current Political Climate in Romania 8. Commerce and Trade in Romania 9. Romanian currency & Exchanges 10. Romanian Social Customs and Etiquette 11. Romanian Demographics 12. Roma 13. Romanian Food 14. Banat University 15. Heifer International 16. Timisoara 17. Hunedoara Judetul 18. Sighisoara	1. Agricultural Infrastructure & Productivity 1948-1989 2. Agricultural Infrastructure & Productivity 1990-2010 3. Food Marketing, Distribution, & Regulation 4. Soil Conservation Practices and Policies 5. Weather Patterns and Agricultural Seasons 6. Agricultural Geography 7. Pork Production 8. Beef Production 9. Poultry & Egg Production 10. Dairy Production 11. Sheep & Goat Production 12. Draft Animals for Power and Transportation 13. Animal Health and Disease 14. Nutrient Management and Environmental Regulations 15. Livestock Care Standards 16. Available Resources: Extension Service 17. Available Resources: Construction and Agriculture Equipment 18. Available Resources: Feed and Animal Health

Assessment of Growth and Learning - 30%

Tests – Two tests will be administered during the seminar on the topics covered since the previous test.

Grading

Using the above assignments, your grade will be based on the following grading scale:

A 90-100%; B 80-89%; C 70-79%; D 60-69%; F 0-59%

Example Preparation Class Schedule:

<u>DATE</u>	Wednesday topics	Assignments
January 11	Bine ati venit in clasa noastra si asteptarile Introduction to the course	Surveys Pick research topics
January 18	Extension Methodology, SWOT Analysis, Needs and Asset-Based Community Development	
January 25	Q & A with Panel of Previous Maymester Students	
February 1	Heifer International Model – Todd Montgomery	Drafts of Political, Economic and Social topic paper due
February 8	Defining Service Learning Introduction to Romanian (language)	Drafts returned to students
February 15	Political, Economic and Social Presentations	Final Drafts of Political, Economic and Social topic paper due

February 22	Political, Economic and Social Presentations	
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March 1	Community Planning & Project Selection model Todd Montgomery, Heifer International	
March 8	Political, Economic and Social Presentations	TEST 1
Spring Break		
March 22	Paclisa <i>Special Guests: John and Diane Serban</i>	Drafts of Agricultural Systems topic paper due
March 29	Principles of Sustainable Development	Drafts returned to students
April 5	Agricultural Systems Presentations	Final drafts of Agricultural Systems topic paper due
April 12	Agricultural Systems Presentations	
April 19	IPIA Safety Meeting	
April 26	Romanian Language <i>Special Guests</i>	TEST 2

Part II – Maymester trip and reflection

SA XXXXXX (ANSC 49500) Animals and Food Security Service Learning Maymester 2011 Course EXAMPLE

Course Description:

This is a faculty-led international service learning course to study and work in selected villages with identified local partners initially in Romania in 2011. Students will learn to contribute to sustainable community projects through application of agricultural ecology, animal well-being focused management, and economic agribusiness projects. Students will be expected to work in bi-national teams across agricultural and community disciplines to not only contribute to the communities served but to apply their classroom knowledge and experience to make a difference in the community. Instruction and reflection are designed to enrich the learning experience, teach civic responsibility, extension methodology, and strengthen communities. This is a 1-3 credit course depending on the length.

Faculty Leadership: Paul Ebner, Mark Russell; Department of Animal Sciences

Schedule and Time: Example

Maymester of 2011 (May 16-June 10) the course will be conducted in selected Romanian villages and when possible, a Heifer International Project village. The class will live and work in the village and spend the weekends visiting historic and cultural sites lead by host-country university agricultural sciences and veterinary medicine students. This is a 3-credit course offered as the first module of summer session. Information on the 2010 course can be found in the five PowerPoint PDF files at <http://www.ag.purdue.edu/ipia/studyabroad/Pages/maymester.aspx>.

Target Student Population

Purdue University students (18) and USAB-TM students (6) interested in enabling families to overcome poverty and make lasting improvements in their quality of life and achieve self-reliance will make up the class enrollment. This is a model of a service-learning course that integrates Purdue and USAB-TM students with local residents to live and work in a village. Three Purdue students will become team members with an Animal Sciences, Agriculture, or Veterinary Medical student from the University of Agricultural Sciences and Veterinary Medicine of Banat in Timisoara. They will comprise six teams of four to work together for the course duration with local residents in the villages as team members.

Pre-requisite Experiences

Upper-class students who have completed the College of Agriculture multicultural elective requirement and the preparatory seminar Animals & Food Securing: Preparing for Service Learning one-credit seminar. If possible, it is recommended that students participate in Purdue's program at the Learning Center at Heifer Ranch, located in Perryville, Arkansas. This is a combination of the Heifer Global Village and Heifer U program that creates a real understanding of the need and community development methods for organizations like Heifer International.

Location and Purpose:

This model of sustainable community development can be replicated in any village with leadership relationships established well enough to ensure safety, a learning environment, and a productive project. Maymester 2011 locations will be the Heifer Project in Vata de Jos, and Paclisa in Hunedoara County, Romania. In Vata de Jos, students will work with the HI dairy and beef cattle Heifer Project. Students will learn firsthand Romanian agriculture practices and culture through homestays and working directly with each of the producers. In Paclișa, we will work with the residents and administrators of a long-term care in patient hospital that serves 200 adults with various disabilities. The facility maintains a farm (produce, grain, livestock and poultry) on its grounds that provide both food and therapy for the residents. Students will work alongside patients, administrators and farm managers to design and implement strategies to improve food animal production. The middle weekend between work sites will be spent visiting cultural sites in Sighișoara.

Course Learning Outcomes:

Through participating in this course, students will develop:

1. An ability to effectively communicate with others regardless of culture and backgrounds.
2. The capacity to work effectively as part of a bi-national problem-solving team.
3. Knowledge of a range of cultures and an understanding of human values and diverse world views.
4. The ability to think critically, communicate effectively, and apply extension education principles to solving real world problems.
5. The capability to apply social, economic, political, and environmental principles to extension approaches and serving an international rural village.

Purdue Students are Expected to:

1. Work hard and actively participate in bi-national problem solving teams with ANSC, Agriculture or Veterinary Medical students from the USAB-TM at Timisoara.
2. Take direction and guidance from local hosts and village leaders and lead teams when needed.
3. Respectfully share American culture with hosts.
4. Maintain an open and inquisitive mind in learning about Romanian life and culture.
5. Participate in regular reflection (journaling) and discussions.
6. Document experiences and prepare a report to share with the public upon return to USA.

Purdue University Students will have:

1. Good academic standing in their major.
2. A strong desire to participate in a service learning project.
3. A flexible and positive attitude.
4. A desire to meet, interact, and assist hosts and fellow team members.

Assignments:

Professional Decorum - 10%

Attendance – There is no single textbook or source of information. The instructors and students will be gathering and sharing information. The only way that students can learn and grow in this environment is to be present and involved. (5%)

Punctuality on trip – Out of respect to our hosts and to fellow students, each individual must take personal responsibility to be on time for all activities. (5%)

Participation and Reports - 30%

Topic Leadership on the trip – Each individual will be expected to take a leadership role while on the trip, with regard to specific aspects of the trip. These responsibilities will be assigned to match the fact sheet topics where possible. (15%)

Daily journal – All students will be expected to record observations and document activities each day. These will be turned in to instructors the following morning; feedback will be provided on the appropriateness and acceptability of the documentation. Occasional (3-4) guided reflective journals will be distributed and replace the daily journals. (15%)

Service Project - 45%

Team Performance - Each student will perform a service-learning small group project with your bi-national team. Your team will work with a local leader in the village and you will be expected to contribute to the project plan, design, analysis, execution, and performance assessment. You be evaluated on how the project actually performed and how the team itself functioned both internally and externally. (20 %)

Final Portfolio of Learning and Experience – Each student will assemble a polished portfolio of the experience and learning throughout the course. A portfolio is a binder, video, PowerPoint presentation, blog, or something similar, containing everything that you have discovered to be course relevant over the entire course. It should also represent the student's "ownership" of the course and reflect the student's personality, culture, and interests. Thus, for example the student may add outside material that you encounter if it strikes you as flushing out the ideas and themes of the course. Students must relate their experiences back to their fact sheet topic and to the coursework and knowledge from their classes taken. They are encouraged to be creative with photos and mementos, and there must be substantial critical analysis of the topic as well. Portfolios will be evaluated using the rubric below. (25%)

Assessment of Growth and Learning - 15%

Pre-trip Quiz – A short quiz will be administered prior to departure on the trip covering material in pre-trip reports and fact sheets. (5%)

Final Examination – This instrument will be designed to allow instructors to gauge the depth of understanding gained by each student. (10%)

Academic Integrity

As with any and all courses at Purdue University, it is vitally important that each of you operate with complete academic integrity. Quotes from the written work of others should be appropriately cited, and all written work should be your own creation (except for citations). Failure to adhere to norms of academic integrity can lead to penalties such as failing the course or suspension from the university.

Grading

Using the above assignments, your grade will be based on the following grading scale:

A 90-100%; B 80-89%; C 70-79%; D 60-69%; F 0-59%

Emergencies

In the event of a major campus emergency, course requirements, deadlines and grading percentages are subject to changes that may be necessitated by a revised semester calendar or other circumstances beyond the

instructor's control. To get information about changes in this course contact either of us at the information above.

Budget:

Student program fee: May 16 - June 10, 2011; \$3,200 to include all travel, lodging including that with families, meals, shared expense of USAVM Timisoara student team members/translators, and faculty expenses for two.

**SERVICE LEARNING PORTFOLIO RUBRIC
FINAL PORTFOLIO OF LEARNING AND EXPERIENCE**

What? Description of Service-Learning Project

Novice (1-3 points)	Apprentice (4-5 points)	Proficient (6-7 points)	Distinguished (8-10 points)
Little description at all, or brief, perfunctory statements glossing over the event(s). The reader has little idea what transpired.	Factual description of sequence of events with little 'texture' or interpretation. Clearly little sense of meaning.	Solid description that fully discloses the scene. Some interpretation of events, meanings, etc.	Clear incisive description that reveals situation and dynamics vividly. Excellent use of adjectives, metaphors, etc. Sensitive and perceptive.

Knowledgeable (Connect Theory and Practice) {So What? Insights and Understanding}

Novice (1-3 points)	Apprentice (4-5 points)	Proficient (6-7 points)	Distinguished (8-10 points)
Neutral experience without personal resonance or impact. Does not interpret. Little or no understanding of connections between theory and practice.	Gains affectively from the experience but insights based on conscious reflection are few or simplistic. Does not describe new insight. Basic understanding of the connections between theory and practice.	Some insights into situation, issues and personal change/growth. Making connections with implications for self or students. Some sense of complexity. Most of the improvement plan describes the connections between theory and practice.	Definite insights into issues and implication of events for self and students. Aware of increased complexity of issues and situations. Describes new insight(s) not considered before. Clear understanding of the connections between theory and practice.

Now What? Commitment and Challenge

Novice (1-3 points)	Apprentice (4-5 points)	Proficient (6-7 points)	Distinguished (8-10 points)
Not committed to leadership development. Definitely not exerting self to a level of commitment.	Committed to leadership through rapport or personal caring. Notes personal progress.	Creates a 'next step' based on previous events or progress in leadership development.	Creates a personal plan of action or personal challenge based on commitment to class or insights into leadership.

Civic Responsibility (Broad Social Concern)

Novice (1-3 points)	Apprentice (4-5 points)	Proficient (6-7 points)	Distinguished (8-10 points)
No progress. Repetitious experience. Negative attitude in reflection.	Steady course. Incremental progress of which the 'leader' may not be personally aware.	Increased sensitivity, change of attitude, and awareness of connections.	Significant growth or personal development. Evidence of synthesis of experience into goals or plan of action, with implications for the future.

Writing Quality

Novice (1-3 points)	Apprentice (4-5 points)	Proficient (6-7 points)	Distinguished (8-10 points)
Considerable difficulty expressing ideas or descriptions clearly. Many grammatical, syntactical, and spelling errors.	Difficulty expressing ideas, feelings or descriptions. Needs to work on grammar, spelling, etc.	Good writing style with solid ability to convey meaning. Few grammar, syntax and spelling errors.	Strong style with clear ability to express thoughts and point of view. Excellent grammar, syntax, spelling, etc.

Adapted from David Burton, Ph.D.

Criteria	Possible Pts	Your Pts
What? Description of Service-Learning Project	10	
So What? Insights and Understanding	10	
Now What? Commitment and Challenge	10	
Progress and Leadership Development	10	
Writing Quality	10	
Total	50	

USAB-TM and Purdue University
“Animals & Food Security Service Learning Class”
Romania, Spring 2011

Monday, 16 May – P Ebner**West Lafayette, IN**

- 1:00 PM • Class meets in ASTL 100 - Bring luggage to campus
- 3:30 • Depart Purdue University by Boiler Maker Express to Chicago O'Hare Airport
- 8:50 • Depart Chicago O'Hare on LH 435 and have a great supper and sleep

Tuesday, 17 May– P Ebner**Timișoara, Romania**

- 12:30 • Arrive in Munich Airport
 - 15:00 • Depart Munich on LH 1660 and snack
 - 17:25 • Arrive in Timisoara
 - Transfer to Universitatea de Stinte Agriole si Medicina Veterinara a Banatului - Timisoara by bus
 - Check-in to lodging at USAB-TM Meet and
 - Joint dinner with EURAXESS delegation and USAB-TM dignitaries
- <http://ec.europa.eu/euraxess/index.cfm/services/index>

Contact: Vice Rector Prof. Horia Cernescu, Dr. Corina ABRAHAM-BARNA, International Relations Secretary, Banat University of Agricultural Sciences and Veterinary Medicine from Timisoara; abraham-barna@uex-usamvbt.org, and Dr. Calin Mircu (USAB-TM)

Calapiș Petru	Agriculture	calapisp@yahoo.com	+40763933077
Luca Roxana	Genetic engineering in agriculture	yo_roxsrl@yahoo.com	+40754878287
Boban Silvia	Engineering and management in food industry and agritourism	silvia_boban2000@yahoo.com	+40761758111
Pricop Andreea-Paraschiva	Veterinary Medicine	pricop.andreea@yahoo.com	+40723491222, +40256295943
Birdean Darko	Agro-Food Processing	birdean_darko@yahoo.com	+40762594495
Ivan Claudia Laura	Agricultural biotechnologies		+40755381732

Wednesday, 18 May – P Ebner

Timișoara

- 8:00 AM
- Breakfast at USAB-TM have dinner (USAB-TM) with Timișoara faculty and students
 - Tour university faculties with host students and meet university officials
 - Learn about Romanian culture from Romanian host students - faculty give seminars
 - Dr. Paul Ebner – “Pre-harvest food animal management” and Stacy Enneking – “Using Animal Behavior to Improve Good Management”
- Lunch at USAB-TM
- PM
- Tour city center & Museum of Banat History
 - Dinner at USAB-TM
 - Lodging at USAB-TM

Thursday, 19 May – P Ebner

Timișoara to Vața de Jos

- 7:00
- Breakfast
- 8:00
- Travel to Deva by USAB-TM bus
- AM/PM
- Meet hosts in Deva; Hunedoara Judet
- Lunch Tour Vata de Jos, meet officials
- Alexandru Indrea, 0722956868
- Eng.Paul Budau, 0745408259
- Calin P Marian; owner of "Flori" Pension. 0746042599
- Vasile Ienasesc, DVM, 0744102780
- Meet host families
- Evening
- Lodging & dinner with host families
- Contact:** Ing. Alexandru Indrea
- Exec. Dir of Association Judetenua A Cresetorelor de Pasari si Animale (AJCPA) +40 722 956 868 alexandru.indrea@yahoo.com,

Friday, 20 May – P Ebner

Deva to Vața de Jos

Meet Homestay families and Homestays for four nights through Monday, May 23 – activities, eating, lodging and living with host families

Monday, 23 May – P Ebner

Vața de Jos

- Meet host families and students at Municipal building

- Deliver baggage to host pensions Flori, Pera, and Ponor
- Lunch at Pension Flori, Pera, and Ponor
- Training (animal breeding, health & management, tourism, agriculture strategy, traditional cuisine)
- Dinner at pensions Flori, Pera, and Ponor

Tuesday, 24 May – P Ebner

Vața de Jos

- 7:00 AM
- Breakfast at Pension Flori, Pera, and Ponor
 - Training (animal breeding, health & management, tourism, agriculture strategy, traditional cuisine)
 - Lunch at Pension Flori, Pera, and Ponor
 - Dinner/meeting Pension Flori, Pera, and Ponor

Wednesday, 25 May – P Ebner

Vața de Jos

- 7:00 AM
- Breakfast at Pension Flori, Pera, and Ponor
 - Work at mountain top sheep farm for applying vet treatment and practice
 - Lunch at mountain top with shepherds
 - Dinner/meeting Pension Flori, Pera, and Ponor

Thursday, 26 May – P Ebner

Vața de Jos

- 7:00am
- Breakfast at Pension Flori, Pera, and Ponor
 - Work at dairy farm to improve management and treatment
 - Lunch at Pension Flori, Pera, and Ponor
 - Work at dairy farm to improve management and treatment
 - Farwell Bonfire
 - Lodging - Pension Flori, Pera, and Ponor

Friday, May 27 – M Russell

Vața de Jos to Sighișoara

- 8:00am • Breakfast at Flori, Pera, and Ponor
- 9:00am • Heifer Romania Conference, Deva
- 13:00 • Depart Vata de Jos for Sighisoara (2 micro busses)
- 17:00 • Lodging at Nathan's Villa Hostel, Libertății, Nr. 8, Sighisoara 545400, Romania
 Nicholea Moldovan, 011- 40-265-77-2546; sighisoara@nathansvilla.com
 Melanie Crisan or Ioana Acs ioanaiancu-ro@yahoo.com ;
 Dinner on your own in Sighisoara
 Burg Hostel Str. Bastionului nr. 4, Sighisoara, Romania 545400 011 40 265 778 489

Saturday, May 28 – M Russell

Sighișoara

- 8:00am • Breakfast at Pension
- Possible Activities: Vlad Dracul's House; The Weapons Collection; the Clock Tower
 The Biserica din Deal; cemetery on the hill
- Class meeting - Dinner
- Lodging at Nathan's Villa Hostel, Str. Libertății, Nr. 8, Sighisoara 545400, Romania
 Burg Hostel Str. Bastionului nr. 4, Sighisoara, Romania 545400 011 40 265 778

Sunday, May 29 – M Russell/Diane Serban /Reach to Romania

Sighișoara to Hațeg

8:00am • Breakfast at Pension

- AM
- Make final preparations for the second work project
 - Travel to Hațeg (2 micro busses)
 - Lunch
- PM
- Meet Hosts: Drs. Emil and Mary Crisan
 - Dinner & orientation meeting with hosts at Bethany House
 - Lodging at Bethany House

Monday, 30 May – M Russell

Hațeg and Paclișa

7:00am • Breakfast at Bethany House

- AM
- Welcome, tour, orientation, organizational meetings
 - Lunch at Paclișa
- PM
- Meet 12 resident co-workers
- Work – team rotations begin -
- Dinner/class meeting at Bethany House
 - Lodging at Bethany House
- Excursions to Retezat Mountains, Corbin Castle, throughout week
- Work teams rotate to other work sites as desired

Tuesday, 31 May – M Russell

Hațeg and Paclișa

7:00am • Breakfast at Bethany House

- AM
- Work
 - Lunch at Paclișa
- PM
- Work
 - Dinner/class meeting at Bethany House
 - Lodging at Bethany House

Wednesday, 1 June – M Russell

Hațeg and Paclișa

7:00am • Breakfast at Bethany House

- AM
- Work
 - Lunch at Paclișa
- PM
- Work
 - Dinner/class meeting at Bethany House
 - Lodging at Bethany House

Thursday, 2 June – M Russell

Hațeg and Paclișa

7:00am • Breakfast at Bethany House

- AM
- Work
 - Lunch at Paclișa
- PM
- Work
 - Dinner/class meeting at Bethany House
 - Lodging at Bethany House

Friday, 3 June – M Russell**Hațeg and Paclișa**

- 7:00am • Breakfast at Bethany House
• Work
• Lunch at Paclișa
• Work
• Dinner/class at Bethany House
• Lodging at Bethany House

Saturday, 4 June – M Russell**Hațeg and Paclișa**

- 7:00am • Breakfast at Bethany House
AM • Work
12:00pm • Lunch at Paclișa
PM • Work
6:00pm • Dinner/class at Bethany House
• Lodging at Bethany House

Sunday, 5 June – M Russell**Hațeg and Paclișa**

- 8:00am • Breakfast at Bethany House
• Free time or worship service
1:00pm • Lunch at Bethany House
6:00pm • Dinner at Bethany House
Denșus basilica
Bon Fire farewell party at Paclișa
• Lodging at Bethany House

Monday, 6 June – M Russell**Paclișa to Timișoara**

- 8:00am • Breakfast at Bethany House
9:00am • Depart for Timisoara – USAB-TM Bus
AM • Visit Dacia Ruins at Sarmizegetusa
• Lunch
PM • Check in to Hotel Roma, Alexandru Vaida Voievod nr.14, Timisoara, Romania
11 DD 3N; Lliana Morician, Mgr., +40 (0) 729-948-452; +40 (0) 356 465 870;
Fax: +40 (0) 729 948 452; Web: www.hotelroma.ro
• Meet hostess, Dr. Andreea Stoian andreeavet@yahoo.com
7:00 • Dinner with Dr. Stoian

Tuesday, 7 June – M Russell**Timișoara**

- 8:00am • Breakfast at Hotel Roma
AM • Journal writing, reflection, documentation of experiences
• Free time
Evening • Cultural show /dinner on your own
• Lodging at Hotel Roma, Alexandru Vaida Voievod nr.14, Timisoara, Romania

Wednesday, 8 June – M Russell**Timișoara**

- 8:00am • Breakfast at Hotel Roma
AM • Journal writing, reflection, documentation of experiences
• Free time
• Farewell Dinner – Casa cu Flori restaurant, Strada Alba Iulia, www.casacufiori.ro, 0256 435 080, mobile 07211 800 11, restaurant@casacufiori.ro
Evening • Lodging at Hotel Roma, Alexandru Vaida Voievod nr.14, Timisoara, Romania

Thursday, 9 June**Timișoara to West Lafayette, IN, USA**

- Breakfast at Hotel Roma
- 11:30am • Travel to airport by USAB-TM bus
- 13:55 • Depart Timisoara on LH 1659 and arrive in Munich at 14:25
- 15:40 • Depart Munich on LH 434 and arrive in Chicago at 6:30 PM
- Boilermaker Express bus to Lafayette
- 10:30 PM • Arrive Purdue University

Pre-planning trip to Haiti (1 credit)

The pre-planning trip to Haiti was similar to the pre-planning trip to Romania except that the class was conducted in the fall semester as the students were in Haiti during winter break (12/27/11 to 1/6/12). Future service learning trips to Brazil and China will be similar as well but the semester that the pre-planning trip will be offered can only be determined after the trip to the country has been organized.

Trip to Haiti over Winter Break (12/27/11 to 1/6/12; 1 credit)

Students that completed the pre-planning trip register for a study abroad course (1 credit) during the spring semester. The itinerary of the trip is presented below.

AIH- Trip to Cap-Haitien, Haiti
“Animals & Food Security Service Learning Class”
Winter Break, 2011-2012

Haley Oliver (765-491-4775) and Mark Russell (765-490-6875)

January 12, 2012

Tuesday, December 27**Indianapolis, IN to JFK, NYC**

10:30 AM - meet at Indianapolis Airport – except Maddy, Quentin, and Blucher
 1:05 PM – depart Indianapolis on Delta 2681 – delayed three hours
 6:30 arrival and take AirTrain JFK to Federal Circle Station 3; and meet hotel shuttle – 2 trips
 Shuttle to Holiday Inn Express and missed “Why NYC for Haitians? orientation panel” and dinner at Chez Mireille Restaurant, 170 Post Avenue, Westbury, NY 11590 Tel: (516) 338-4933; www.Mirelles.com
 Ordered pizza + to be the hotel class meeting – late and rainy start. Maddy delayed then cancelled.
 Lodging: Holiday Inn Express, Kennedy Airport, 153-70 South Conduit Ave., Jamaica, NY 11434; 718-977-3100 Hotel
 Fax: 718-977-6100

Wednesday, December 28**NYC, NY to Santiago, DR**

4:00 AM – shuttle to JFK airport – terminal not open and transmission problem in one shuttle van
 7:20 AM - depart JFK on Delta 549
 12:14 PM – arrive in Santiago, DR – met Allan Alexandre, 1-829-308-9640; alexandreallan@hotmail.com
 Transport to Hotel then Food Court lunch, Price Smart, and naps
 Supper at hotel and then tour monument, carriage horses, and picked up Maddy who came about 9:00 PM to Santiago via Pittsburgh, Charlotte, and Miami
 Lodging at Hotel Century Plaza, Av. Rafael Vidal, No. 30, Santiago, Dominican Republic;
 +1 829-583-2000, www.hotelcenturyplaza.com

Thursday, December 29**Santiago, DR to Cap Haitien, Haiti**

Breakfast at Century Plaza – load bus on top, service air conditioner on bus, drive to La Madonna roadside lunch
 Cross border at Dajabon, DR into Ouanaminthe, Haiti

3:00 PM - meet Ewaldy Estil, Northern Director of Heifer International; office: 509-251-40918; cell: 509-374-48888; 509-370-14989 Ewaldy.ESTIL@heifer.org Visit Heifer International Passing on the Gift Ceremony, Quanamithe, Haiti; visited dairy processing plant; Levi Foundation, and EU funds.
Drive through Cap-Haitien to lodging at Cormier Plage, Route de Labadie, Bande de Nord, Cap-Haitien, +1 – 509-3528-1100; cell +1-509-3702-0210; www.cormierhotel.com and supper

Friday, December 30

Cap Haitien

Breakfast at Cormier Plage
Play with kids on the beach from Helping Haitian Angels, Linsey Jorgenson, linsey@hhangels.org
University graduation ceremony – Gedeon Eugene, President, Universite de Antenor Firmin (UNAF) (unafcap@yahoo.fr : phone 509-3644-6254).
Lunch at Roi Christophe Hotel – outdoor buffet with CTEAD students and management team
Welcome and overview of Haitian agricultural, food production, and challenges
Gedeon Eugene, President, Universite de Antenor Firmin (UNAF)
Georgemain Prophete, Branly's cousin and former Regional delegate; invitation
Jean-Claude Pierre-louis; le_sagepl@hotmail.com; 509-3644-6254-CTEAD overview
Ewadley Estil, Northern Director; Tel: 509-2514-0918 Ewaldy.ESTIL@heifer.org
Deliver supplies to Branly's orphanage in Morne Rouge
Supper and lodging at Cormier Plage, +1 – 509-3528-1100; cell +1-509-3702-0210

Saturday, December 31

Cap Haitien

Breakfast at Cormier Plage
Visit Milot, La Citadelle Laferrière, Sans-Souci Palace and conduct market assessment on access to the La Citidelle
Sandwich lunch on the road to Dondon, Cooperative Agricole Gabard le Vaillant (CACGAVA) home of Alltech Café
Citadelle – quick tour of coffee processing
New Year's Eve tapas buffet and party at Cormier Plage

Sunday, January 1

Cap Haitien

Breakfast (for some) at Cormier Plage
Buffet brunch at 1:00 at Cormier and beach, hikes, sandcastles, etc.
Supper and lodging at Cormier Plage, +1 – 509-3528-1100; cell +1-509-3702-0210

Monday, January 2

Cap Haitien

Breakfast at Cormier Plage
Picked up sandwiches and went to work with the CTEAD students, built shade building of bamboo support structure and leaf roof and then made about 350 seed setting bags of soil/compost.
Lunch at bus and toured Branly's father's plantain farm then went to his lime tree farm behind cousin's house and drank coconut milk
Dropped Russell off at Auberge De Picolet to meet with Shute and Andy English for dinner meeting and class visited Branly's home
Supper and lodging at Cormier Plage, +1 – 509-3528-1100; cell +1-509-3702-0210

Tuesday, January 3

Cap Haitien

Breakfast at Cormier Plage
Met CTEAD students near George Prophete's house/village
Work with university on projects to make natural fertilizer and pesticide mixtures, irrigation systems, and then weed the corn and hill the beans.
Returned to Cap-Haitien (Some rode Tap-Tap near Cap-Haitien) and then to lunch at Croissant D'Or and to Universite de Antenor Firmin (UNAF) for Dr. Oliver's "Science of Agriculture" lecture and CTEAD poster and educational material presentations, exchange of gifts, and tour of new classroom and lab building.
Supper and lodging at Cormier Plage, +1 – 509-3528-1100; cell +1-509-3702-0210

Wednesday, January 4

Cap Haitien

Breakfast at Cormier Plage
First rain delay and then went to Boad? To work with Milot goat Heifer International project group in two teams – one setting cocoa seeds in compost soli bags and the other barbed wire "living post" fence

Then presentation of clothes and snacks to families in the village at furniture manufacturing site
Then back to Palace tourist vendors for souvenirs and Russell met with Pres. of horse owners' association – Gabron? Then stopped for vanilla etc. souvenirs on the way back through Cap Haitien
Lodging at Cormier Plage, +1 – 509-3528-1100; cell +1-509-3702-0210

Thursday, January 5

Cap Haitien to Santiago, DR

Breakfast at Cormier Plage

Visited Georgemain Prophete's house/distillery and Food for the Poor village and then Andy English at North Coast Farms & Community Development Corp. in Terrier Rouge. acenglishjr@hotmail.com; www.northcoastdevelopment.org

Travel to border and on to Santiago, Dominican Republic; Lodging and Supper at

Hotel Century Plaza, Av. Rafael Vidal, No. 30, Santiago, Dominican Republic; +1 829-583-2000,

Friday, January 6

Santiago, D.R. to Indianapolis, IN

Breakfast at Hotel Century Plaza

9:00 AM – transfer to airport

1:38 PM – depart Santiago on Delta 550 to New York City

4:42 PM – arrive JFK

6:25 PM – depart on Delta 3355 to DTW

9:35 PM – depart DTW on Delta 4057 to IND 10:50 PM – without luggage – day later

Post-Trip (Reflection; 1 credit)

During the spring semester, students enroll in a post-Haiti course for one credit. Expectations and outcomes are similar to those described in detail for the Romania trip.

C. Prerequisites: None

D. Course Instructor(s): Dr. Paul Ebner or Dr. Mark Russell

E. Course Outline of Topics/Syllabus:

Actual itineraries of past and present International Experience Course trips are available from the instructors as well as the IRB-approved reflective journaling assessments used during the international experiences.

Second Half-(After Midterm)

F. Reading List/Textbook:

G. Library Resources

H. Example of a Course Syllabus (optional)

**Department of Food Science
Proposed Course and Curricular Changes**

A. COURSES TO BE DELETED

None

B. COURSES TO BE ADDED

FS 50600/HORT 50600 COMMERCIAL GRAPE AND WINE PRODUCTION

Sem. 1. Class 2 Lab 2. cr. 3. Prerequisites: Student must (i) be at least 21 years when the course commences (ii) have academic advisor's and instructor's approval to enroll in the course. Prior or concurrent attendance of FS 47000 *Wine Appreciation* is strongly recommended.

Advanced enology and viticulture; scientific principles of viticulture and enology and the practices of commercial grape growing and winemaking.

A. Justification for the Course:

As Midwestern agriculture is diversifying, almost three hundred wineries have sprung up in the tri-state area of Indiana, Michigan and Ohio alone. At the local food and wine industries are growing rapidly, demand for trained winegrowers and winemakers is on the rise proportionally. In response, the Purdue Wine Grape Team, a group of scientists and cooperative extension specialists, has been teaching a new food science class to graduate and undergraduate students as well as members of the wine industry. The Commercial Grape and Wine Production course is a semester-long combination of lectures and hands-on training in the field during the grape harvest: The Department of Food Science's pilot winery features commercial-grade winemaking equipment and the Department of Horticulture and Landscape Architecture's experimental vineyards are home to more than seventy grape varieties. The class is co-taught by Christian Butzke, professor of enology – the science of wine and winemaking, and Bruce Bordelon, professor of viticulture - the science of grape cultivation. The students study professional grape growing and wine production with an emphasis on Midwestern climates, adapted varieties, and recommended wine styles. Students will learn the scientific principles of viticulture and enology and the practices of commercial grape growing and winemaking

This advanced enology and viticulture class is designed mainly, but not exclusively for graduate students in the College of Agriculture. The class is limited to 12 students to optimize the time for direct interactions with the instructors and due to limitations on equipment in laboratory and pilot winery. This is an intense applied science class that requires a solid understanding of various scientific disciplines, including biological, organic and physical chemistry, microbiology, chemical engineering, horticulture and

plant biology.

B. Learning Outcomes and Method of Evaluation or Assessment:

Students will receive a comprehensive education about the principles and practices of commercial grape and wine production. Their learning outcomes will be assessed by testing their ability to solve a range of real-life production problems in class discussions and the final exam, as well as by judging their skill set to produce a batch of commercially acceptable wine from vineyard to bottle.

Criteria

1. Attendance and Class Participation (40 points):

- Attendance is mandatory.
- Excused absences only cover personal emergencies, such as acute illness, accidents, or death in the family, as well as US military service and religious observations, but need to be *documented*.
- Unexcused absences include job interviews or fairs, ALL university events or projects related to other classes, Greek or sports activities, etc.
- Two unexcused absences will automatically drop final grade by one letter.

2. Assignments (30 points):

- **Winemaking Project (20 points)**
 - i. Students produce their own batch of experimental wine from vineyard to bottle.
- **Readings in Viticulture and Enology (10 points)**
 - ii. Review various topic-related articles from scientific and trade journals prior to class.

3. Examinations (30 points)

- There will be a final exam, counting for 30% of the final grade.

Scoring and Grading:

- Class participation credits40 Points
- Class assignments30 Points
- Final exam30 Points
- Final grading scale for class
 - Combined grade of 90 – 110 Points **A**
 - 80 – 89.99 Points **B**
 - 70 – 79.99 Points **C**
 - 60 – 69.99 Points **D**
 - below 60 Points **F**

Method of Instruction

- Lecture and lab combination that meets once per week for 4 hours for 16 weeks.
- Hands-on experiential learning during approximately one-half of the course.

C. Prerequisites:

Students must be at least 21 years of age and have your academic advisor's and our consent in order to take this course. Prior or concurrent attendance of FS 470 Wine Appreciation is strongly recommended.

D. Course Instructors:

- *Provide the name, rank, and department/program affiliation of the instructors.*
 - 1) Christian Butzke, Professor of Enology, FS
 - 2) Bruce Bordelon, Professor of Viticulture, HLA
- *Are the instructors currently a member of the Graduate Faculty?*
YES

E. Course Outline:

- Viticulture topics:
 - 1) Impact of climates and soils on variety selection
 - 2) Vineyard establishment
 - 3) Vine training
 - 4) Canopy management
 - 5) Pest management
 - 6) Fruit quality evaluations
- Enology topics:
 - 1) Winery equipment choices
 - 2) Winery sanitation
 - 3) Yeast and bacteria preparation
 - 4) White, red, sparkling, fruit, and dessert winemaking techniques
 - 5) Oak cooperage
 - 6) Fining and stabilization
 - 7) Wine sensory evaluation, blending and troubleshooting
 - 8) Filtration, bottling and closures
 - 9) Wine analyses and winery quality systems

F. Reading List (including course text):

- 1) Winemaking Problems Solved. Christian E. Butzke (Editor). Woodhead Publishing (2010).
- 2) Midwest Grape Production Guide. Imed Dami, Bruce P. Bordelon, et al. Ohio State University Extension (2005).
- 3) Wine Appreciation. Christian E. Butzke. Kendall-Hunt Publishing (2010).
- 4) Principles and Practices of Winemaking by Roger B. Boulton, Vernon L. Singleton, Linda F. Bisson, and Ralph E. Kunkee. Springer; 1st edition (1996).

G. Library Resources

N/A.

H. Example of a Course Syllabus

Please see attached.

C. COURSES TO BE CHANGED

From: FS 36200 Food Microbiology Sem. 1. Class 3, cr. 3. Prerequisites: BIOL 22100, C- minimum grade

Microbiology of foods, with emphasis on the conditions for growth of microorganisms and degradation of food components, preservation methods and use of Hazard Analysis and Critical Control Point (HACCP), and microorganisms associated with foodborne illness

To: FS 36200 Food Microbiology Sem. 1. Class 3, cr. 3. Prerequisites: BIOL 22100, C- minimum grade; **BCHM 30700 or BCHM 56100 or CHM 33300**

Microbiology of foods, with emphasis on the conditions for growth of microorganisms and degradation of food components, preservation methods, use of Hazard Analysis and Critical Control Point (HACCP) **concepts**, microorganisms associated with foodborne illness, **and modern detection methods**

From: FS 363 Food Microbiology Laboratory Sem. 1. Lab 4. cr. 2. Prerequisites: FS 36200 (co-requisite)

Methods for enumerating, isolating, and identifying spoilage or pathogenic or fermentative microorganisms involved in food processing, preservation, and distribution.

To: FS 36300 Food Microbiology Laboratory Sem. 1. Lab 4. cr. 2. Prerequisites: FS 36200 (co-requisite); **BCHM 30900**

Classic and molecular methods for enumerating, isolating, and identifying spoilage, fermentative, and pathogenic food microorganisms **in food systems**

Justification:

The concepts in biochemistry lecture and laboratory courses are needed for students to understand the concepts in FS 36200 Food Microbiology and FS 36300 Food Microbiology Laboratory. Dr. Haley Oliver is the new instructor for these courses as of Fall 2010. She is incorporating modern detection and fingerprinting methods into the course in an effort to better prepare students for successful careers in the food industry and government. After teaching the course for the first time in the Fall of 2010, Dr. Oliver recognized that students that had not completed BCHM 30700 and 30900 were typically not prepared to learn molecular detection techniques. Specifically, fundamental biochemistry concepts (e.g., “The Central Dogma”) are essential to successfully learning modern methods in food microbiology. Thus, establishing the biochemistry courses as pre-requisites for the food microbiology courses is requested. Additionally, the course descriptions for FS 36200 and FS 36300 were modified to reflect the course changes instituted by Dr. Oliver. The BCHM 30700 and 30900 courses are already required for the food science major, and are expected to be taken the spring semester of sophomore year as shown in the food science major plan of study. Enacting this prerequisite will simply enforce the plan of study, while benefitting the food microbiology courses.

From: FS 45500 Cereal Chemistry and Processing Sem. 1. Cr. 2.

Cereal grain structure, chemical and functional properties, and nutritional aspects related to grain milling and processing. Cereal processing covers dry and wet milling, brewing, baked products, pasta, breakfast cereals, snack foods, and traditional cereal foods from other countries. (Offered in even-numbered years.)

To: FS 45500 Cereal Chemistry and Processing Sem. 1. Cr. 1.

Cereal grain structure, chemical and functional properties, and nutritional aspects related to grain milling and processing. Cereal processing covers dry and wet milling, brewing, baked products, pasta, breakfast cereals, snack foods, and traditional cereal foods from other countries. (Offered in even-numbered years.)

Justification:

FS 45500 is currently a 10 week, 2 credit course. The instructor of the course, Dr. Bruce Hamaker, recommends that it be restructured into a 5 week, 1 credit course. The rationale behind this change is to align depth and breadth of the course content with similar 1 credit courses offered in the department (e.g., FS 36100 Food Plant Sanitation, FS 34000 Food Law).

From: FS 24500 – Food Packaging Sem. 2. Cr. 2.

Credit Hours: 2.00. Elements of packaging science, technology, and engineering applied to preservation, distribution, and marketing of food products, packaging materials, machinery, and technology; principles of diffusion and permeability; procedures for developing, evaluating, and testing food packages; packaging requirements for specific types of foods; other special topics of current interest.

To: FS 24500 – Food Packaging Sem. 2. Cr. 1.

Credit Hours: 1.00. Elements of packaging science and technology applied to preservation, distribution, and marketing of food products; packaging materials; principles of diffusion and permeability; procedures for developing, evaluating, and testing food packages; packaging requirements for specific types of foods; other special topics of current interest.

Justification:

FS 24500 is currently a 10 week, 2 credit course taught during weeks 1-10. The instructor of the course, Dr. Lisa Mauer, recommends that the course be restructured into a 5 week, 1 credit course. The rationale behind this change is to align depth and breadth of course content with similar 1 credit courses offered in the department (e.g., FS 36100 Food Plant Sanitation, FS 34000 Food Law).

From: FS 44300 Food Processing IIISem. 3. Cr. 3. Prerequisites for Food Science majors: Undergraduate level FS 44200 minimum grade of D-

Prerequisites for non-majors: AGECEC 32700 minimum grade of D- or Undergraduate level
MGMT 32300 minimum grade of D-.

Teams develop a new product from concept through marketing. Final case study defense is presented to faculty and peers. Classes include guest lectures from the food industry.

To: FS 44300 Food Processing III Sem. 3. Cr. 3. Prerequisites for Food Science majors: Undergraduate level FS 44200, FS 24500, FS 46700, FS 53000, FS 36100, FS 53000, FS 33500 (co-requisite), FS 34000 (co-requisite); minimum grade of D- in all pre-requisite courses.

Prerequisites for non-majors: AGECEC 32700 minimum grade of D- or Undergraduate level
MGMT 32300 minimum grade of D-.

Teams develop a new product from concept through marketing. Final case study defense is presented to faculty and peers. Classes include guest lectures from the food industry.

Justification:

FS 44300 Food Processing III serves as the capstone course in the Food Science undergraduate major. While prerequisites currently exist for the course, there have been instances where students which have taken courses out of sequence are able to enroll in the course prior to completion of courses critical to their success in FS 44300. Addition of FS 24500 Food Packaging, FS 46700 Food Analysis, FS 53000 Food Ingredient Technology, FS 36100 Food Plant Sanitation, FS 53000 Food Ingredient Technology, FS 33500 Human Sensory (co-requisite), FS 34000 Introduction to Food Law and Regulations (co-requisite) as prerequisites or co-requisites ensures that students are adequately prepared to develop, test and market the novel food products designed in the course. It further positions this course as the official capstone of Food Science. It also serves as our major point of assessment of our students at the end of their degree program.

D. CURRICULAR CHANGES

Addition of math and science course pre-requisite completion and GPA minimum for registration eligibility into the food science major required upper division courses

Food Science Majors

This policy is intended to provide every student who completes the required math and science courses in the Food Science curriculum during freshman and sophomore years and has an overall math and science GPA ≥ 2.5 eligible for enrollment in upper division courses in the Food Science major in the Department of Food Science. Students who earn <2.5 GPA in math and science and/or do not complete the identified math and science courses are not eligible for registration in the upper division Food Science courses until these inclusion criteria have been met. Specifically, to enroll in upper division Food Science courses (FS 300+, 400+, and 500+), a student must meet a minimum GPA ≥ 2.5 in math and science courses, as well as satisfy all pre-requisites for each FS course. The following courses are the science and math course requirements for freshman and sophomore Food Science majors to meet prerequisite requirements in upper division Food Science courses: MA 22300, MA

22400, STAT 30100, BIOL 11000, BIOL 11100, BIOL 22100, BCHM 30700, BCHM 30900, CHM 11500, CHM 11600, and organic chemistry (CHM 25700 and 25700L or CHM 25500 and 25600). Therefore, the following quality management policy will apply to all students:

Math and Science Course Requirements*		Overall Math and Science GPA	Admission into FS major required upper division courses (FS 300+)
Students must complete the following math and science courses prior to entry in upper division required Food Science courses: MA 22300, MA 22400, STAT 30100, BIOL 11000, BIOL 11100, BIOL 22100, BCHM 30700, BCHM 30900, CHM 11500, CHM 11600, organic chemistry (CHM 25700 and 25700L or CHM 25500 and 25600)	AND	$GPA \geq 2.5$	Guaranteed admission into the upper division Food Science courses.
	AND	$GPA < 2.5$	Ineligible for admission into upper division FS courses <u>until GPA and pre-requisites have been achieved.</u>

*The math and science course requirements, or their equivalents, may only be enrolled in two times for a grade. A maximum of three math and science required courses may be retaken.

Justification:

The Food Science major in the Purdue University Food Science Department is accredited by its national organization, the Institute of Food Technologists (IFT). As part of the accreditation process, the Department of Food Science at Purdue established that students are required to receive a minimum 2.5 GPA in Food Science coursework to successfully complete the Food Science major. Thus, in an effort to graduate high-quality students with increased likelihoods of career success, we propose a minimum GPA of 2.5 in math and science courses currently in the plan of study in freshman and sophomore years, for a student to be eligible for enrollment in upper division courses (FS 300+, 400+, and 500+ courses) required food science courses. When reviewing data from current Food Science students, it was found that setting a minimum GPA in overall math and science courses of 2.5 would encompass all students who, as seniors, had a minimum 2.5 GPA in Food Science coursework. All students with less than a 2.5 GPA in Food Science coursework as seniors also had less than a 2.5 GPA in overall math and science courses. To summarize, students with a math and science GPA < 2.5 also have a Food Science coursework GPA < 2.5 and will not graduate with a Food Science degree.

FS 591/HORT 590 COMMERCIAL GRAPE AND WINE PRODUCTION

SYLLABUS

Instructors-in-Charge:

Christian Butzke, Enology Professor
Food Science (NLSN), Room 1261

765.494.6500

butzke@purdue.edu

Dr. Bruce Bordelon, Viticulture Professor
Horticulture (HORT), Room 307

765.494.2812

bordelon@purdue.edu

Please feel free to stop by our offices at any time. However, our Extension work for Indiana wineries involves frequent trips away from campus, so you may want to contact us before making the trip over to the Food Science (NLSN) or Horticulture (HORT) buildings (http://www.purdue.edu/campus_map).

CRNs (This course can be taken either as a *Food Science* or a *Horticulture* class):

Food Science 59100 008,009,010

Enroll in 48050, 48051 and 48052

Horticulture 59000 002,003,004

Enroll in 48053, 48054 and 48055

Course Objectives:

Description: A study of professional grape growing and wine production with an emphasis on Midwestern climates, adapted varieties, and recommended wine styles. This course is intended for upper level undergraduate, or graduate students in the College of Agriculture that have completed basic coursework in plant sciences, biology and chemistry. Students will learn the principles of viticulture and enology and the practices of commercial grape growing and winemaking. Viticulture topics include impact of climates and soils on variety selection, vineyard establishment, vine training, canopy management, pest management, and fruit quality parameters. Enology topics include winery equipment, winery sanitation, yeast and bacteria preparation, white winemaking, red winemaking, sparkling winemaking, fruit winemaking, dessert winemaking, cooperage, fining and stabilization, wine tasting, blending and troubleshooting, filtration, bottling and closures, as well as wine analyses and quality systems.

Reference Texts:

- Winemaking Problems Solved. Christian E. Butzke (Editor). Woodhead Publishing (2010).
- Midwest Grape Production Guide. Imed Dami, Bruce P. Bordelon, et al. Ohio State University Extension (2005).
- Wine Appreciation. Christian E. Butzke. Kendall-Hunt Publishing (2010).
- Principles and Practices of Winemaking by Roger B. Boulton, Vernon L. Singleton, Linda F. Bisson, and Ralph E. Kunkee. Springer; 1st edition (1996).

Pre-Requisites:

- You must be at least 21 years of age on August 25th, 2011 and have your academic advisor's and our consent in order to take this course. Prior or concurrent attendance of FS 470 *Wine Appreciation* is strongly recommended.

Etiquette:

- Project wines cannot be removed from the NLSN building. This will be enforced to the fullest.

Health:

- In this class, we have the privilege to sample an alcoholic beverage. With this privilege comes the responsibility not to abuse it.

Academic Integrity

Modified Student Honor Code as proposed by the University Student Affairs Committee²⁰¹⁰:

- Whereas: Academic dishonesty occurs at increasing rates on college and university campuses
- Whereas: The Purdue Student Government supports the reduction and elimination of academic dishonesty and the promotion of academic integrity on Purdue University campuses
- Whereas: The Purdue Student Government has rewritten the current Student Code of Honor with the following Modified Student Code of Honor:
- The purpose of the Purdue University academic community is to discover and disseminate truth. In order to achieve these goals, the university commits itself towards maintaining a culture of academic integrity and honesty. For this to be possible, self-discipline and a strong desire to benefit others must be present within each individual. Therefore, we students must follow the Regulations Governing Student Conduct of Purdue University out of a sense of mutual respect, rather than out of fear of the consequences of their violation.
- Whereas: The Purdue Student Government will help facilitate educational activities at various venues such as the Boiler Gold Rush and the Star Program for new and continuing students about the Modified Student Code of Honor
- Whereas: The Purdue Student Government will encourage faculty to include the Modified Student Honor Code in course syllabi
- Therefore, Be It Resolved That: The University Senate endorses the Modified Student Honor Code and its dissemination through educational activities on Purdue campuses and its placement in course syllabi.

Reference: Purdue University Code of Honor

http://www.purdue.edu/univregs/pages/stu_conduct/code_of_honor.html

It is encouraging to note that very few students in this class have let themselves down, in their choice to cheat rather than study and learn. As teachers we will attempt to be fair and forgiving when it is merited; however, untenable cases will be taken to the Dean of Students in accordance with the Student Bill of Rights (http://www.purdue.edu/univregs/pages/stu_conduct/bill_right.html)

Class meets on Thursdays from 9:30 a.m. to 1:20 p.m.
 First day of class is **AUGUST 25TH, 2011**.
 We shall assemble in the Nelson Hall of Food Science, Room 1137.

1. Attendance and Class Participation (40 points):

- Attendance is mandatory.
- Excused absences only cover personal emergencies, such as acute illness, accidents, or death in the family, as well as US military service, but need to be *documented*.
- Unexcused absences include job interviews or fairs, ALL university events or projects related to other classes, Greek or sports activities, etc. Please choose your priorities carefully!
- Two unexcused absences will automatically drop your final grade by one letter.

2. Assignments (30 points):

- **Winemaking Project (20 points)**
 - i. Produce your own batch of experimental wine from vineyard to bottle.
- **Readings in Viticulture and Enology (10 points)**
 - ii. Review various topic-related articles from scientific and trade journals prior to class.

3. Examinations (30 points)

- There will a final exam, counting for 30% of the final grade.
Date: **Thursday, December 15th, 2011**
- Grades will be made available via **Blackboard Vista**:
<http://www.itap.purdue.edu/tlt/blackboard/>
- Students with documented learning disabilities who have special needs for taking the class or exams shall contact ODOS and the instructors at the beginning of the semester.

Scoring and Grading:

• Class participation credits	40 Points
• Class assignments	30 Points
• Final exam	30 Points
• Final grading scale for class	
Combined grade of	90 – 110 Points A
	80 – 89.99 Points B
	70 – 79.99 Points C
	60 – 69.99 Points D
	below 60 Points F

- Please note that we do **NOT** use or report a **PLUS/MINUS** grading scale.

- **Students are encouraged and expected to challenge the instructors, ask questions, discuss pertinent material, offer opinions and become fully involved.**

Instructors

Christian Butzke

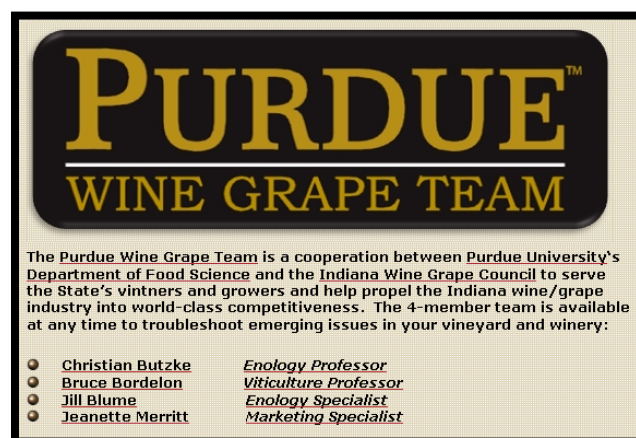
Dr. Christian Butzke is a professor of enology in the Department of Food Science, Purdue University, and a member of the Purdue Wine Grape Team that serves Midwestern vintners and growers. He is chief judge of the Indy International, one of the largest wine competitions in the US and past-president of the American Society for Enology and Viticulture, the winemakers' professional guild. He is the author of two books and dozens of scientific and popular publications on wine. His applied research program addresses fine wine quality from fermentation problems to bottle closure issues, from global wine transport conditions to wine aging kinetics. His extension responsibilities include the planning, coordination and teaching of a wide variety of professional education programs in enology. A former faculty member of the UC Davis Department of Viticulture and Enology, he is the co-founder of the Joint Burgundy-California-Oregon Winemaking Symposia, served on the managing committee for the wine industry's largest conference, the Unified Wine & Grape Symposium, and has been an award-winning commercial winemaker. A US citizen and native of West Berlin, he is married to a family law attorney and has three daughters.

<http://www.butzke.com>

Bruce Bordelon

Dr. Bruce Bordelon is a professor of viticulture in the Department of Horticulture and Landscape Architecture Research and a member of the Purdue Wine Grape Team since 1991. He conducts research and extension related grapes and small fruit, with emphasis on integrated crop management to improve economics of production and fruit quality using sustainable approaches, and including the evaluation of new grape cultivars for superior fruit quality and adaption to Indiana climates and soils.

<http://www.ag.purdue.edu/hla/Pages/bordelon.aspx>



www.indianaquality.org

CLASS SCHEDULE Fall 2011

Aug 25	Viticulture 1	Grapevine physiology and winegrape varieties	Bordelon
Sep 1	Viticulture 2	Training and trellising systems	Bordelon
Sep 8	Viticulture 3	Grapevine nutrition and canopy management	Bordelon
Sep 15	Viticulture 4	Pest and disease management	Bordelon
Sep 22	Viticulture 5	Vineyard quality control and sampling techniques	Bordelon
Sep 29	Field Trip	Whyte Horse Winery	Bordelon/Butzke
Oct 6	Viticulture 6	Ripeness assessments and harvest decisions	Bordelon
Oct 13	Enology 1	White winemaking	Butzke
Oct 20	Enology 2	Red winemaking	Butzke
Oct 27	Enology 3	Sparkling and dessert winemaking	Butzke
Nov 3	Enology 4	Fining, stabilization and winery sanitation	Butzke
Nov 10	Enology 5	Oak barrels and corks	Butzke
Nov 17	Enology 6	Wine analyses, quality systems and troubleshooting	Butzke
Nov 24	No Class	Thanksgiving	
Dec 1	Enology 7	Wine filtration and bottling operations	Butzke
Dec 8	Enology 8	Sensory evaluation of wine	Butzke
Dec 15		FINAL EXAM	

Department of Forestry and Natural Resources

Proposed Course and Curricular Changes

A. COURSE TO BE DELETED

B. COURSES TO BE ADDED

FNR 53600 Ecology of Disturbance. Sem 2. Cr 2, Lec 2.

Course Description:

Advanced lecture- and discussion-based class examining how disturbance shapes the composition and structure of communities and landscapes across major terrestrial biomes. Students will examine and discuss the relationships between disturbance intensity, frequency, and spatial extent and how these characteristics affect ecological processes and ecologically-based management of forest and grassland ecosystems. The class will also examine the synergistic effects of multiple disturbances and the restoration of endemic disturbance regimes in contemporary ecosystems. Course is reading intensive; students will read and discuss on average 3-8 journal articles per week. Typically offered in even years during the spring semester.

Prerequisites:

FNR 33100 Minimum Grade of D- or BIOL 58500 Minimum Grade of D-

FNR 53601 Ecology of Disturbance Practicum, Sem 2, Cr. 1,

Course Description:

Course consists of a one week long field trip to a remote site; typically the Great Smoky Mountain National Park, over spring break. Student will experience the concepts and theories presented in FNR 53600, hence enrollment is contingent upon enrollment in FNR 53600. Course requires additional fees for travel. Typically offered in even years during the spring semester.

Prerequisite: FNR 53600 (Maybe taken concurrently).

C. COURSES TO BE CHANGED

The following course changes primarily involve requiring a **C- or better** rather than D- or better for prerequisites in Wildlife and some Fisheries& Aquatic Science and Forestry focused courses. Some other prerequisite changes are the removal and addition of courses to better fit the actual prerequisite requirement for the course. Changes are in **red**.

From:

FNR 241 – Systematics and Ecology of Fishes and Mammals

Credit Hours: 3.00. Introduction to the ecology and systematics of fishes and mammals. Discuss the evolutionary adaptations and ecological processes of these vertebrate groups at the individual, population, and community levels. Examine the roles of phylogeny, physiology, morphology, and behavior in influencing organismal responses to the environment. Assess issues related to the conservation of fishes and mammals. Typically offered Fall.

3.000 Credit hours

Prerequisites:

(Undergraduate level [BIOL 11000](#) Minimum Grade of D- or Undergraduate level [BIOL 22600](#) Minimum Grade of D- or Undergraduate level [BIOL 12100](#) Minimum Grade of D-)

To:

FNR 24100 – Systematics and Ecology of Fishes and Mammals

Credit Hours: 3.00. Introduction to the ecology and systematics of fishes and mammals. Discuss the evolutionary adaptations and ecological processes of these vertebrate groups at the individual, population, and community levels. Examine the roles of phylogeny, physiology, morphology, and behavior in influencing organismal responses to the environment. Assess issues related to the conservation of fishes and mammals. Typically offered Fall.

3.000 Credit hours

Prerequisites:

(Undergraduate level [BIOL 11000](#) Minimum Grade of C- or Undergraduate level [BTNY 11000](#) Minimum Grade of C- or Undergraduate level [BIOL 12100](#) Minimum Grade of C-)

Justification:

Faculty in the Wildlife program want to increase academic rigor and expectations in the curriculum. This will facilitate an increase in material presented in all wildlife courses and result in an improved education for students.

Impact on Learning Outcomes:

Scientific principles

Critical thinking

Professional preparation

From:

FNR 251 – Systematics and Ecology of Amphibians, Reptiles, and Birds

Credit Hours: 3.00. Introduction to the ecology and systematics of amphibians, reptiles, and birds. Discuss the evolutionary adaptations and ecological processes of these vertebrate groups at the individual, population, and community levels. Examine the roles of phylogeny, physiology, morphology, and behavior in influencing organismal responses to the environment. Assess issues related to the conservation of amphibians, reptiles, and birds. Typically offered Spring.

3.000 Credit hours

Prerequisites:

(Undergraduate level [BIOL 11000](#) Minimum Grade of D- or Undergraduate level [BIOL 22600](#) Minimum Grade of D- or Undergraduate level [BIOL 12100](#) Minimum Grade of D-)

To:

FNR 251 – Systematics and Ecology of Amphibians, Reptiles, and Birds

Credit Hours: 3.00. Introduction to the ecology and systematics of amphibians, reptiles, and birds. Discuss the evolutionary adaptations and ecological processes of these vertebrate groups at the individual, population, and community levels. Examine the roles of phylogeny, physiology, morphology, and behavior in influencing organismal responses to the environment. Assess issues related to the conservation of amphibians, reptiles, and birds. Typically offered Spring.

3.000 Credit hours

Prerequisites:

(Undergraduate level [BIOL 11000](#) Minimum Grade of C- or Undergraduate level [BTNY 11000](#) Minimum Grade of C- or Undergraduate level [BIOL 12100](#) Minimum Grade of C-)

Justification:

Faculty in the Wildlife program want to increase academic rigor and expectations in the curriculum. This will facilitate an increase in material presented in all wildlife courses and result in an improved education for students.

Impact on Learning Outcomes:

Scientific principles

Critical thinking

Professional preparation

From:

FNR 34800 - Wildlife Techniques

FNR 24200 FOR LEVEL UG WITH MIN. GRADE of C- AND (MA 22300 FOR LEVEL UG

WITH MIN. GRADE of C- AND MA 22400 FOR LEVEL UG WITH MIN. GRADE of C-) OR MA 16100 FOR LEVEL UG WITH MIN. GRADE of C- OR MA 16300 FOR LEVEL UG WITH MIN. GRADE of C- OR MA 22500 FOR LEVEL UG WITH MIN. GRADE of C- OR MA 22700 FOR LEVEL UG WITH MIN. GRADE of C- OR MA 16500 FOR LEVEL UG WITH MIN. GRADE of C- OR (MA 22100 FOR LEVEL UG WITH MIN. GRADE of C- AND MA 22200 FOR LEVEL UG WITH MIN. GRADE of C-) OR MA 22900 FOR LEVEL UG WITH MIN. GRADE of C- OR (MA 22300 FOR LEVEL UG WITH MIN. GRADE of C- AND MA 22400 FOR LEVEL UG WITH MIN. GRADE of C-) AND (STAT 30100 FOR LEVEL UG WITH MIN. GRADE of C- OR STAT 50100 FOR LEVEL UG WITH MIN. GRADE of C- OR STAT 50300 FOR LEVEL UG WITH MIN. GRADE of C- OR ECON E2700 FOR LEVEL UG WITH MIN. GRADE of C- OR STAT 35000 FOR LEVEL UG WITH MIN. GRADE of C- OR STAT 26000 FOR LEVEL UG WITH MIN. GRADE of C- OR STAT 51100 FOR LEVEL UG WITH MIN. GRADE of C-) AND (MA 22400 FOR LEVEL UG WITH MIN. GRADE of C- (MAY BE TAKEN CONCURRENTLY) OR MA 26100 FOR LEVEL UG WITH MIN. GRADE of C- (MAY BE TAKEN CONCURRENTLY) OR MA 23000 FOR LEVEL UG WITH MIN. GRADE of C- (MAY BE TAKEN CONCURRENTLY)) AND FNR 25200 FOR LEVEL UG WITH MIN. GRADE of C- (MAY BE TAKEN CONCURRENTLY)

To:

FNR 34800 - Wildlife Techniques

Credit Hours: 3.00. An introduction to current wildlife research techniques that are used in managing populations and habitats. Laboratory and field exercises are used to gather and analyze data; basic data analysis and written dissemination of results is emphasized. Typically offered Spring.

Prerequisites:

FNR 24200 FOR LEVEL UG WITH MIN. GRADE of C- AND (MA 22300 FOR LEVEL UG WITH MIN. GRADE of C- OR MA 16100 FOR LEVEL UG WITH MIN. GRADE of C- OR MA 16500 FOR LEVEL UG WITH MIN. GRADE of C- OR MA 22100 FOR LEVEL UG WITH MIN. GRADE of C- OR MA 22900 FOR LEVEL UG WITH MIN. GRADE of C- OR MA 23100 FOR LEVEL UG WITH MIN. GRADE of C-)-(MA 22300 FOR LEVEL UG WITH MIN. GRADE of C- AND MA 22400 FOR LEVEL UG WITH MIN. GRADE of C-) OR MA 16100 FOR LEVEL UG WITH MIN. GRADE of C- OR MA 16300 FOR LEVEL UG WITH MIN. GRADE of C- OR MA 22500 FOR LEVEL UG WITH MIN. GRADE of C- OR MA 22700 FOR LEVEL UG WITH MIN. GRADE of C- OR MA 16500 FOR LEVEL UG WITH MIN. GRADE of C- OR (MA 22100 FOR LEVEL UG WITH MIN. GRADE of C- AND MA 22200 FOR LEVEL UG WITH MIN. GRADE of C-) OR MA 22900 FOR LEVEL UG WITH MIN. GRADE of C- OR (MA 22300 FOR LEVEL UG WITH MIN. GRADE of C- AND MA 22400 FOR LEVEL UG WITH MIN. GRADE of C-) AND (STAT 30100 FOR LEVEL UG WITH MIN. GRADE of C- OR STAT 50100 FOR LEVEL UG WITH MIN. GRADE of C- OR STAT 50300 FOR LEVEL UG WITH MIN. GRADE of C- OR ECON E2700 FOR LEVEL UG WITH MIN. GRADE of C- OR STAT 35000 FOR LEVEL UG WITH MIN. GRADE of C- OR

STAT 26000 FOR LEVEL UG WITH MIN. GRADE of C- OR STAT 51100 FOR LEVEL UG WITH MIN. GRADE of C-) ~~AND (MA 22400 FOR LEVEL UG WITH MIN. GRADE of C- (MAY BE TAKEN CONCURRENTLY) OR MA 26100 FOR LEVEL UG WITH MIN. GRADE of C- (MAY BE TAKEN CONCURRENTLY) OR MA 23000 FOR LEVEL UG WITH MIN. GRADE of C- (MAY BE TAKEN CONCURRENTLY))~~ AND FNR 25200 FOR LEVEL UG WITH MIN. GRADE of C- (MAY BE TAKEN CONCURRENTLY) **Justification:**

Faculty in the Wildlife program want to increase academic rigor and expectations in the curriculum. This will facilitate an increase in material presented in all Wildlife courses and result in an improved education for students. Also results with other changes in a common math and statistics requirement for the FNR Summer Practicum courses.

Impact on Learning Outcomes:

Scientific principles
Critical thinking
Professional preparation

From:

FNR 34100 - Wildlife Habitat Management

Credit Hours: 3.00. Principles, practices, and justification of the habitat management approach to the manipulation of wildlife populations. Typically offered Spring.
0.000 OR 3.000 Credit hours

Prerequisites:

Undergraduate level **FNR 22500** Minimum Grade of D- and Undergraduate level **FNR 37000** Minimum Grade of D-

To:

FNR 34100 - Wildlife Habitat Management

Credit Hours: 3.00. Principles, practices, and justification of the habitat management approach to the manipulation of wildlife populations. Typically offered Spring.
0.000 OR 3.000 Credit hours

Prerequisites:

Undergraduate level **FNR 22500** Minimum Grade of **C-** and Undergraduate level **FNR 37000** Minimum Grade of **C-**

Justification:

Faculty in the Wildlife program want to increase academic rigor and expectations in the curriculum. This will facilitate an increase in material presented in all Wildlife courses and result in an improved education for students.

Impact on Learning Outcomes:

Scientific principles
Critical thinking
Professional preparation

From:

FNR 35100 - Aquatic Sampling Techniques

Credit Hours: 3.00. An introduction to laboratory and field sampling methods in aquaculture, limnology, and fisheries biology. Emphasis will be placed on the proper use of laboratory equipment and sampling gears, as well as the development of sampling protocols for collecting representative, non-biased fisheries and aquatic sciences data. Typically offered Spring.

Prerequisites:

FNR 24200 FOR LEVEL UG WITH MIN. GRADE of C- AND (MA 22300 FOR LEVEL UG WITH MIN. GRADE of C- AND MA 22400 FOR LEVEL UG WITH MIN. GRADE of C-) OR MA 22500 FOR LEVEL UG WITH MIN. GRADE of C- OR MA 22900 FOR LEVEL UG WITH MIN. GRADE of C- OR MA 16500 FOR LEVEL UG WITH MIN. GRADE of C- OR MA 22700 FOR LEVEL UG WITH MIN. GRADE of C- OR MA 16300 FOR LEVEL UG WITH MIN. GRADE of C- OR (MA 22100 FOR LEVEL UG WITH MIN. GRADE of C- AND MA 22200 FOR LEVEL UG WITH MIN. GRADE of C-) OR MA 16100 FOR LEVEL UG WITH MIN. GRADE of C- AND (STAT 30100 FOR LEVEL UG WITH MIN. GRADE of C- OR STAT 35000 FOR LEVEL UG WITH MIN. GRADE of C- OR STAT 51100 FOR LEVEL UG WITH MIN. GRADE of C- OR STAT 26000 FOR LEVEL UG WITH MIN. GRADE of C- OR STAT 50300 FOR LEVEL UG WITH MIN. GRADE of C- OR ECON E2700 FOR LEVEL UG WITH MIN. GRADE of C- OR STAT 50100 FOR LEVEL UG WITH MIN. GRADE of C-) AND FNR 25200 FOR LEVEL UG WITH MIN. GRADE of C- (MAY BE TAKEN CONCURRENTLY)

To:

[FNR 35100 - Aquatic Sampling Techniques](#)

Credit Hours: 3.00. An introduction to laboratory and field sampling methods in aquaculture, limnology, and fisheries biology. Emphasis will be placed on the proper use of laboratory equipment and sampling gears, as well as the development of sampling protocols for collecting representative, non-biased fisheries and aquatic sciences data. Typically offered Spring.

Prerequisites

FNR 24200 FOR LEVEL UG WITH MIN. GRADE of C- AND (MA 22300 FOR LEVEL UG WITH MIN. GRADE of C- ~~AND MA 22400 FOR LEVEL UG WITH MIN. GRADE of C-) OR MA 22500 FOR LEVEL UG WITH MIN. GRADE of C- OR MA 22900 FOR LEVEL UG WITH MIN. GRADE of C- OR MA 16500 FOR LEVEL UG WITH MIN. GRADE of C- OR MA 16300 FOR LEVEL UG WITH MIN. GRADE of C- OR MA 22100 FOR LEVEL UG WITH MIN. GRADE of C- ~~AND MA 22200 FOR LEVEL UG WITH MIN. GRADE of C-) OR MA 16100 FOR LEVEL UG WITH MIN. GRADE of C- OR MA 22900 FOR LEVEL UG WITH MIN. GRADE of C- OR MA 23100 FOR LEVEL UG WITH MIN. GRADE of C-) AND (STAT 30100 FOR LEVEL UG WITH MIN. GRADE of C- OR STAT 35000 FOR LEVEL UG WITH MIN. GRADE of C- OR STAT 51100 FOR LEVEL UG WITH MIN. GRADE of C- OR STAT 26000 FOR LEVEL UG WITH MIN. GRADE of C- OR STAT 50300 FOR LEVEL UG WITH MIN. GRADE of C- OR ECON E2700 FOR LEVEL UG WITH MIN. GRADE of C- OR STAT 50100 FOR LEVEL UG WITH MIN. GRADE of C-) AND FNR 25200 FOR LEVEL UG WITH MIN. GRADE of C- (MAY BE TAKEN CONCURRENTLY)~~~~

Justification:

Faculty in the Wildlife and Fisheries program want to increase academic rigor and expectations in the curriculum. This will facilitate an increase in material presented in all Wildlife and Fisheries courses and result in an improved education for students. Also results with other changes in a common math and statistics requirement for the FNR Summer Practicum courses.

Impact on Learning Outcomes:

Scientific principles
Critical thinking
Professional preparation

From:

[FNR 35300 - Natural Resources Measurement](#)

Credit Hours: 3.00. An introduction to sampling techniques and fundamental principles for measuring natural resources. Typically offered Spring.

Prerequisites

(MA 22300 FOR LEVEL UG WITH MIN. GRADE OF D- AND MA 22400 FOR LEVEL UG WITH MIN. GRADE OF D-) OR MA 16500 FOR LEVEL UG WITH MIN. GRADE OF D- OR MA 16300 FOR LEVEL UG WITH MIN. GRADE OF D- OR MA 16100 FOR LEVEL UG WITH MIN. GRADE OF D- OR MA 22900 FOR LEVEL UG WITH MIN. GRADE OF D- OR MA 22500 FOR LEVEL UG WITH MIN. GRADE OF

D- OR MA 22700 FOR LEVEL UG WITH MIN. GRADE OF D- OR (MA 22100 FOR LEVEL UG WITH MIN. GRADE OF D- AND MA 22200 FOR LEVEL UG WITH MIN. GRADE OF D-) AND (STAT 30100 FOR LEVEL UG WITH MIN. GRADE OF D- OR STAT 26000 FOR LEVEL UG WITH MIN. GRADE OF D- OR STAT 51100 FOR LEVEL UG WITH MIN. GRADE OF D- OR STAT 50100 FOR LEVEL UG WITH MIN. GRADE OF D- OR ECON E2700 FOR LEVEL UG WITH MIN. GRADE OF D- OR STAT 50300 FOR LEVEL UG WITH MIN. GRADE OF D- OR STAT 35000 FOR LEVEL UG WITH MIN. GRADE OF D-) AND (MA 22400 FOR LEVEL UG WITH MIN. GRADE OF D- (MAY BE TAKEN CONCURRENTLY) OR MA 23000 FOR LEVEL UG WITH MIN. GRADE OF D- (MAY BE TAKEN CONCURRENTLY) OR MA 26100 FOR LEVEL UG WITH MIN. GRADE OF D- (MAY BE TAKEN CONCURRENTLY))

To:

[FNR 35300 - Natural Resources Measurement](#)

Credit Hours: 3.00. An introduction to sampling techniques and fundamental principles for measuring natural resources. Typically offered Spring.

Prerequisites

From:

~~FNR 22500 FOR LEVEL UG WITH MIN. GRADE of D- AND (MA 22300 FOR LEVEL UG WITH MIN. GRADE OF D- AND MA 22400 FOR LEVEL UG WITH MIN. GRADE OF D-) OR MA 16500 FOR LEVEL UG WITH MIN. GRADE OF D- OR MA 16300 FOR LEVEL UG WITH MIN. GRADE OF D- OR MA 16100 FOR LEVEL UG WITH MIN. GRADE OF D- OR MA 22900 FOR LEVEL UG WITH MIN. GRADE OF D- OR MA 23100 FOR LEVEL UG WITH MIN. GRADE OF D- OR MA 22700 FOR LEVEL UG WITH MIN. GRADE OF D- OR MA 22100 FOR LEVEL UG WITH MIN. GRADE OF D- AND MA 22200 FOR LEVEL UG WITH MIN. GRADE OF D-) AND (STAT 30100 FOR LEVEL UG WITH MIN. GRADE OF D- OR STAT 26000 FOR LEVEL UG WITH MIN. GRADE OF D- OR STAT 51100 FOR LEVEL UG WITH MIN. GRADE OF D- OR STAT 50100 FOR LEVEL UG WITH MIN. GRADE OF D- OR ECON E2700 FOR LEVEL UG WITH MIN. GRADE OF D- OR STAT 50300 FOR LEVEL UG WITH MIN. GRADE OF D- OR STAT 35000 FOR LEVEL UG WITH MIN. GRADE OF D-) AND (MA 22400 FOR LEVEL UG WITH MIN. GRADE OF D- (MAY BE TAKEN CONCURRENTLY) OR MA 23000 FOR LEVEL UG WITH MIN. GRADE OF D- (MAY BE TAKEN CONCURRENTLY) OR MA 26100 FOR LEVEL UG WITH MIN. GRADE OF D- (MAY BE TAKEN CONCURRENTLY)) AND FNR 21000 FOR LEVEL UG WITH MIN. GRADE of D- (MAY BE TAKEN CONCURRENTLY)~~

Justification:

This change represents the current practice and the needed knowledge for success in FNR 35300. These changes also provide, with other changes in this document, in a common math and statistics requirement for the FNR Summer Practicum courses across the FNR majors.

Impact on Learning Outcomes:

Scientific principles
Critical thinking
Professional preparation

From:

[FNR 35900 - Spatial Ecology And GIS](#)

Credit Hours: 3.00. Introduction to the principles of landscape ecology and biogeography with a laboratory devoted to the analysis of spatial data using geographic information systems. Typically offered Fall.

Prerequisites

FNR 21000 FOR LEVEL UG WITH MIN. GRADE OF D-

To:

[FNR 35900 - Spatial Ecology And GIS](#)

Credit Hours: 3.00. Introduction to the principles of landscape ecology and biogeography with a laboratory devoted to the analysis of spatial data using geographic information systems. Typically offered Fall.

Prerequisites

FNR 21000 FOR LEVEL UG WITH MIN. GRADE OF C- and (Undergraduate level [MA 22400](#) Minimum Grade of C- or Undergraduate level [MA 23200](#) Minimum Grade of C- or Undergraduate level [MA 23000](#) Minimum Grade of C-)

Justification:

Faculty in the Natural Resources Planning Faculty program want to increase academic rigor and expectations in the curriculum. This will facilitate an increase in material presented in all courses and result in an improved education for students.

Impact on Learning Outcomes:

Scientific principles

Critical thinking
Professional preparation

From:

FNR 44700 – Vertebrate Population Dynamics

Credit Hours: 4.00. Estimation and analysis of populations; computer modeling of sampling methods, population dynamics, population and habitat management. Knowledge of computer programming not required. Typically offered Fall.
0.000 OR 4.000 Credit hours

Prerequisites:

Undergraduate level [FNR 20300](#) Minimum Grade of D- and (Undergraduate level [MA 22400](#) Minimum Grade of D- or Undergraduate level [MA 26100](#) Minimum Grade of D- or Undergraduate level [MA 23000](#) Minimum Grade of D-) and (Undergraduate level [STAT 30100](#) Minimum Grade of D- or Undergraduate level [ECON E2700](#) Minimum Grade of D- or Undergraduate level [STAT 50100](#) Minimum Grade of D- or Undergraduate level [STAT 51100](#) Minimum Grade of D- or Undergraduate level [STAT 35000](#) Minimum Grade of D- or Undergraduate level [STAT 26000](#) Minimum Grade of D- or Undergraduate level [STAT 50300](#) Minimum Grade of D-)

To:

FNR 44700 – Vertebrate Population Dynamics

Credit Hours: 4.00. Estimation and analysis of populations; computer modeling of sampling methods, population dynamics, population and habitat management. Knowledge of computer programming not required. Typically offered Fall.
0.000 OR 4.000 Credit hours

Prerequisites:

Undergraduate level [BIOL 28600](#) Minimum Grade of C- and (Undergraduate level [MA 22400](#) Minimum Grade of **C-** or Undergraduate level [MA 23200](#) Minimum Grade of **C-** or Undergraduate level [MA 23000](#) Minimum Grade of **C-**) and (Undergraduate level [STAT 30100](#) Minimum Grade of **C-** or Undergraduate level [ECON E2700](#) Minimum Grade of **C-** or Undergraduate level [STAT 50100](#) Minimum Grade of **C-** or Undergraduate level [STAT 51100](#) Minimum Grade of **C-** or Undergraduate level [STAT 35000](#) Minimum Grade of **C-** or Undergraduate level [STAT 26000](#) Minimum Grade of **C-** or Undergraduate level [STAT 50300](#) Minimum Grade of **C-**)

Justification:

Faculty in the Wildlife program want to increase academic rigor and expectations in the curriculum. This will facilitate an increase in material presented in all Wildlife courses and result in an improved education for students.

Impact on Learning Outcomes:

Scientific principles

Critical thinking

Professional preparation

Contact for information:

Michael Jenkins	Michael Saunders
4-3602	4- 2155
jenkinma@purdue.edu	msaunder@purdue.edu
PFEN 221D	PFEN 221C

Course Subject Abbreviation and Number: FNR 53600**Course Title: Ecology of Disturbance****Course Description:**

Advanced lecture- and discussion-based class examining how disturbance shapes the composition and structure of communities and landscapes across major terrestrial biomes. Students will examine and discuss the relationships between disturbance intensity, frequency, and spatial extent and how these characteristics affect ecological processes and ecologically-based management of forest and grassland ecosystems. The class will also examine the synergistic effects of multiple disturbances and the restoration of endemic disturbance regimes in contemporary ecosystems. Course is reading intensive; students will read and discuss on average 3-8 journal articles per week. Typically offered in even years during the spring semester.

A. Justification for the Course:**a. Need**

Currently, there is no graduate-level terrestrial ecology course offered in the FNR curriculum. This class is designed to provide students with advanced knowledge of both natural and anthropogenic disturbance regimes and how these regimes influence ecosystem structure and function. These concepts will be linked to disturbance-based management and modern concepts of using management to restore degraded ecosystems. This class is not designed to serve only forestry students but is instead designed to consider a range of ecosystem responses (including animal populations) to disturbance.

b. Level and target audience

This class is targeted towards graduate and advanced undergraduate students that have a sound understanding of community and ecosystem ecology. Students will need the ability to compile literature, develop a synthesis of concepts, and effectively share knowledge through both oral presentations and written essay exams. Expected enrollment is 5-15 students when offered in alternative, even spring semesters.

B. Learning Outcomes and Method of Evaluation or Assessment:**a. Objectives and learning outcomes**

At completion of this course, students should be able to:

1. Describe how disturbance shapes community composition and structure for several major terrestrial biomes.
2. Understand how disturbance regulates biological diversity across terrestrial and aquatic ecosystems.
3. Understand the relationship between disturbance intensity, frequency, and spatial extent and how those factors affect management of forest and grassland ecosystems.

4. Describe the synergistic nature of disturbance and identify how disturbance factors interact across a landscape.
5. Describe how contemporary and restored disturbance regimes may facilitate or suppress the spread of invasive species.
6. Understand how management activities can mimic endemic disturbance regimes to promote biodiversity and sustainability.

b. Methods of assessment

This course can be taken for credit or audited. Auditing students will not be required to develop a class presentation. For students taking the class for credit, plus/minus letter grading will be used, with the "+" and "-" and assigned to the top and bottom 3% of a letter grade, respectively.

c. Grading criteria

Students will be assessed based upon their class presentation, a take-home final, and classroom participation. Student presentations will require students to select an appropriate topic, identify and read significant literature, present a synthesis of current knowledge, and lead discussion with the class. The take-home final requires synthesis and incorporation of class discussions, and materials from assigned readings. The final will consist of 4-8 essay questions, each question requiring $\frac{1}{2}$ - 2 typewritten pages to answer. Students will have one week to complete the final. Classroom participation will be based on the student's knowledge of assigned readings and contribution to class discussions. The final grade will be calculated with weights of 40%, 40%, and 20% for the take home exam, presentation, and classroom participation, respectively.

d. Methods of instruction

This class will meet two hours per week for a formal lecture (approximately the first hour) and discussion period. Student presentations will be incorporated into the lecture/discussion portion of the class.

C. Prerequisite(s):

This course has a prerequisite of FNR 33100 – Forest Ecosystems or a similar upper-level undergraduate or a graduate-level terrestrial ecology course. Advanced undergraduate students may enroll with instructor permission.

D. Course Instructor(s):

This course is taught by Dr. Michael A. Jenkins, Assistant Professor of Forest Ecology and Michael R. Saunders, Assistant Professor of Hardwood Silviculture, in the Department of Forestry and Natural Resources. Both instructors are members of the Graduate Faculty.

E. Course Outline:

The first third of the course concentrates on evolution of disturbance theory, principles of patch and gap-phase dynamics, post-disturbance stand development, and principles of landscape ecology. The second third of the class will focus specific disturbance agents including fire, herbivory, and wind, and synergistic influences such as climate change and invasive species. The final third of the course will focus on student-led presentations and discussions.

F. Reading List

This class also makes extensive use of the primary literature. These materials are updated every time the class is taught. When last taught in Spring 2010 as an FNR 598 class, the reading list was:

- Andresen, E. 2003. Effect of forest fragmentation on dung beetle communities and functional consequences for plant regeneration. *Ecography* 26: 87-97.
- Blossey B. and R. Notzold. 1995. Evolution of increased competitive ability in invasive nonindigenous plants: a hypothesis. *Journal of Ecology* 83: 887-889.
- Brose, P., T. Schuler, D. Van Lear, and J. Berst, J. 2001. Bringing fire back: the changing regimes of the Appalachian mixed-oak forests. *Journal of Forestry* 99: 30-35.
- Brothers, T.S. and A. Spingarn. 1992. Forest fragmentation and alien plant invasion of central Indiana old-growth forests. *Conservation Biology* 6: 91-100.
- Cooper, G. 1998. Generalizations in ecology: a philosophical taxonomy. *Biology and Philosophy* 13: 555-586.
- Connell, J.H. 1978. Diversity in tropical rain forests and coral reefs. *Science* 199: 1302-1310.
- Dale, V.H., L.A. Joyce, S. McNulty, R.P. Neilson, M.P. Ayres, M.D. Flannigan, P.J. Hanson, L.C. Irland, A.E. Lugo, C.J. Peterson, D. Simberloff, F.J. Swanson, B.J. Stocks, and B.M. Wotton. 2001. Climate change and forest disturbances. *BioScience* 51: 723-734.
- Drever, C.R., G. Peterson, C. Messier, Y. Bergeron, and M. Flannigan, M., 2006. Can forest management based on natural disturbances maintain ecological resilience? *Canadian Journal of Forest Research* 36: 2285-2299.
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- Runkle, J.R. 1998. Changes in southern Appalachian canopy tree gaps sampled thrice. *Ecology* 79:1768-1780.
- Ryan, K.C. 2002. Dynamic interactions between forest structure and fire behavior in boreal ecosystems. *Silva Fennica* 36: 13–39.
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- Townsend, C.R. 1989. The patch dynamics concept of stream community ecology. *Journal of the North American Benthological Society* 8: 36-50.
- Turner, M.G., W.H. Romme, R.H. Gardner, R.V. O'Neill and T.K. Kratz. 1993. A revised concept of landscape equilibrium: disturbance and stability on scaled landscapes. *Landscape Ecology* 8: 213-227.
- Turner M.G., W.H. Romme, and D.B. Tinker. 2003. Surprises and lessons from the 1988 Yellowstone fires. *Frontiers in Ecology and the Environment* 1: 351-58.
- Waldrop, T.A. and P.H. Brose. 1999. A comparison of fire intensity levels for stand replacement of table mountain pine (*Pinus pungens* Lamb.). *Forest Ecology and Management* 113: 155-166.
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- Webster, C.R., J.H. Rock, R.E. Froese, and M.A. Jenkins. 2008. Drought-herbivory interaction disrupts competitive displacement of native plants by *Microstegium vimineum*, 10 year results. *Oecologia* 157: 497-50.
- White, P.S. J. Harrod, J.L. Walker, and A. Jentsch. 2000. Disturbance, scale, and boundary in wilderness management. Pp. 27-42, *In* S.F. McCool, D.N. Cole, W.T. Borrie, and J. O'Loughlin, eds. *Wilderness science in a time of change conference, Volume 2: Wilderness within the context of larger systems*, May 23–27, 1999, Missoula, MT. Proceedings RMRS-P-15-VOL-2. USDA FS, Rocky Mountain Research Station, Ogden, UT.
- White, P.S., and S.T.A. Pickett. 1985. Natural disturbance and patch dynamics: an introduction. Pp. 3-13. *In* S.T.A. Pickett and P.S. White, eds. *The Ecology of Natural Disturbance and Patch Dynamics*. Academic Press, Inc. New York.
- White, P.S. 1979. Pattern, process and natural disturbance in vegetation. *Botanical Review* 45: 229-299.

G. Library Resources:

The required book chapters for this class are put on reserve at the Lily Life Sciences Library. This class also makes extensive use of the ejournals provided by Purdue Libraries.

H. Course Syllabus

Please note that this syllabus reflects teaching this course and FNR 53610 as a combined course.

Ecology of Natural Disturbances (FNR 598) Spring 2010

Instructor:	Mike Jenkins	Mike R. Saunders
Office:	221D PFEN	221C PFEN
Phone:	494-3602	494-2155
Email:	jenkinma@purdue.edu	msaunder@purdue.edu
Office Hours:		F 8-10

Classroom: F 10:30– 12:20, PFEN 203

Class folder: On Blackboard Vista 4 (BV4) at <https://blackboard.purdue.edu/webct/logon/>

Course Material: All assigned readings for this course will be posted on the class blackboard site.

Course Objectives:

At completion of this course students should be able to:

1. Describe how disturbance shapes community composition and structure for several major terrestrial biomes.
2. Understand how disturbance regulates biological diversity across terrestrial and aquatic ecosystems.
3. Understand the relationship between disturbance intensity, frequency, and spatial extent and how those factors affect management of forest and grassland ecosystems.
4. Describe the synergistic nature of disturbance and identify how disturbance factors interact across a landscape.
5. Describe how contemporary and restored disturbance regimes may facilitate or suppress the spread of invasive species.
6. Understand how management activities can mimic endemic disturbance regimes to promote biodiversity and sustainable forest management.
7. Synthesize and present scientific knowledge.

Course Description:

Classroom: The classroom portion of the course will consist of both lecture-based and discussion-based formats. Early in the semester, we will lecture for a large portion of the class period, largely covering introductory material. As the semester progresses, we will transition more to a discussion-based format, with the first hour of the period more lecture-based and the second hour as open discussion. By the end of the class, we will expect students to lead specific discussions. As such, your grade in this class will be highly dependent on being actively involved in classroom discussion.

Fieldtrip: The fieldtrip for students enrolled for 3 credits will take place over spring break. We will camp out during this trip and students must be able to hike up to 8 miles a day. A \$125 fee will be charged to

cover transportation costs and camping fees. Students will be responsible for purchasing food, but cooking stoves will be provided. On the fieldtrip, we will visit a range of biotic communities and discuss their endemic disturbance regimes, contemporary condition, and ongoing management issues related to disturbance ecology.

Readings: As a graduate level class, there will be a considerable number of assigned readings each week – generally 3-8 journal articles. We expect students to be familiar with these readings BEFORE class begins.

In addition, there may be optional readings that we give each week that will help reinforce topics covered during the class. These articles should be skimmed as they this material will helpful to keep the discussion flowing. We do expect you to draw from these optional readings, however, on the final exam.

Assessment:

Tests: There will only be an open-book final in this class. The final will require synthesis and incorporation of class discussion and materials from both assigned and optional readings, and from the student presentations. The final will consist of 4-8 essay questions, each question requiring ½ - 2 typewritten pages to answer. You will have 1 week to complete the exam; it will be handed out during class on **April 30**.

Student Presentations: During the second half of the semester, a majority of the classes will be student-led with each of you taking a turn presenting a topic and leading a discussion. While we have not worked out the details of the assignment yet, our intent is to have each individual choose a specific topic, gather several sources (both reviews and original articles), and distill those into a 30 minute lecture. A 30 minute discussion period would then follow each presentation. Details on the assignment will follow in a separate handout, but key dates will include **January 29** for topic statement and **1 week prior to your presentation** for a handout to give to the class specifying 2-4 articles to read and some thought-provoking questions to help stimulate the following week’s discussion. Note that individuals not enrolled in the field trip component of this class will be assigned the earliest dates.

Class Participation: As this is a small class, attendance is required in order to have good discussion of the various topics we will cover. In addition, there may be times we draw on each of you to stimulate the discussion, so keeping up to date on assigned readings (at least by reading the abstract and skimming the body of the article) is highly recommended.

Grading:

Bottom cutoffs for letter-grades will be: A- = 90%; B- = 80%; C- = 70%; and D- = 60%. Plus/minus grading will be used, with the “+” and “-” assigned to the top and bottom 2% of a letter grade, respectively. The final grade will be calculated according to the table on the right.

Final	40
Participation	20
TOTAL	100

<i>Item:</i>	<i>%</i>
Student Presentation	40

TENTATIVE SCHEDULE – SPRING 2010

<i>Date</i>	<i>Topic</i>	<i>Due</i>
Jan 15	Class overview / Introduction and history of the field	
Jan 22	Patch and gap-phase dynamics	
Jan 29	Stand development / Landscape ecology principles	<i>Presentation Topic</i>
Feb 5	Fire as a disturbance agent	
Feb 12	Climate influences on disturbance regimes	
Feb 19	Anthropogenic disturbances on ecosystems (deer, fire suppression, invasive species)	
Feb 26		
Mar 5	Managing to emulate natural disturbances	
Mar 12	<i>Trip planning or traveling</i>	
Mar 19	NO CLASS - Spring Break	
Mar 26	Student presentations	
Apr 2		
Apr 9		
Apr 16		
Apr 23		
Apr 30	Wrap-up	
May 7	NO CLASS - Finals Week	<i>Take-Home Final</i>

In the event of a major campus emergency, course requirements, deadlines and grading percentages are subject to changes that may be necessitated by a revised semester calendar or other circumstances. Either check the class web page on BV4 or contact me via email or phone to get information about any changes in this course.

Students with Disabilities:

If you have a disability that requires some special accommodation, please make an appointment within the first two weeks of the semester for a visit to either of our offices to discuss the appropriateness of the instructional methods in this class, or any academic adjustments that you may need. We have found it possible to make accommodations in the past, but it is important that we talk about this at the beginning of the semester.

Contact for information:

Michael Jenkins	Michael Saunders
4-3602	4- 2155
jenkinma@purdue.edu	msaunder@purdue.edu
PFEN 221D	PFEN 221C

Course Subject Abbreviation and Number: FNR 53601

Course Title: Ecology of Disturbance Practicum

Course Description:

Course consists of a one week long field trip to a remote site; typically the Great Smoky Mountain National Park, over spring break. Student will experience the concepts and theories presented in FNR 53600, hence enrollment is contingent upon enrollment in FNR 53600. Course requires additional fees for travel. Typically offered in even years during the spring semester.

Prerequisite: FNR 53600 (Maybe taken concurrently).

I. Justification for the Course:

a. Need

Currently, there is no graduate-level field-based terrestrial ecology course offered in the FNR curriculum. This class is designed to complement FNR 53600 Ecology of Disturbance by allowing students to directly observe disturbance agents, ecological effects of disturbance, and the integration of disturbance to forest management in the field. The contents of this course will reinforce concepts introduced in FNR 53600.

b. Level and target audience

This class is targeted towards graduate and advanced undergraduate students that have a sound understanding of community and ecosystem ecology. Because this course is offered in conjunction with the proposed FNR 53600, students will need the ability to apply concepts to field-based settings. Expected enrollment is 5-15.

J. Learning Outcomes and Method of Evaluation or Assessment:

a. Objectives and learning outcomes

At completion of this course, students should be able to give specific examples of:

7. How disturbance shapes community composition and the distribution of species across landscapes.
8. How alterations to endemic disturbance regimes affect the composition, structure, and function of ecosystems.
9. Interactions of natural disturbance and invasion of exotic species and their synergistic effects on forest community development.
10. Management that uses natural disturbance to restore and maintain biotic communities and ecosystems.

b. Methods of assessment

This course must be taken for credit. The plus/minus letter grading will be used, with the “+” and “-” and assigned to the top and bottom 3% of a letter grade, respectively.

c. Grading criteria

Students will be assessed based upon a take-home final and participation in field discussions. The final will consist of 2 - 4 essay questions, each question requiring ½ - 2 typewritten pages to answer. Students will have one week to complete the final after returning from the field trip. Participation will be based on the student's knowledge of assigned readings and their ability to identify and discuss ecological concepts observed in the field. The final grade will be calculated with weights of 60% for the take home exam and 40% for participation.

d. Methods of instruction

This class will require a week to two week long field trip. This field trip will require students to observe and discuss disturbance-related phenomenon on the ground. Students will also interact with local land managers to learn how management activities incorporate endemic disturbance regimes.

K. Prerequisite(s):

FNR 53600 is also a co- or prerequisite for this class.

L. Course Instructor(s):

This course is taught by Dr. Michael A. Jenkins, Assistant Professor of Forest Ecology and Michael R. Saunders, Assistant Professor of Hardwood Silviculture, in the Department of Forestry and Natural Resources. Both instructors are members of the Graduate Faculty.

M. Course Outline:

The field location of this course will change periodically. The course will consist of 4-6 days of field visits, with 1-2 days of travel on each end. Students will observe the effects of various types of disturbance and discuss implications for ecosystem management and biodiversity conservation. The instructors will also schedule field visits with local managers and scientists from federal and state agencies. Discussions with these professionals will improve student understanding of how disturbance can be incorporated into ecologically-based management.

N. Reading List

This class also makes extensive use of the primary literature. Reading assignments will vary based upon the forest region visited for a given year. Assignments are used to improve understanding of observed concepts and to provide context for answers to essay test questions. When last taught in Spring 2010 as an FNR 598 class, the reading list was:

Bratton, S.P., R.C. Mathews, and P.S. White. 1980. Agricultural area impacts within a natural area: Cades Cove, a case history. *Environmental Management* 4: 433-448.

Brose PH, Waldrop TA. 2006. Fire and the origin of table mountain pine – pitch pine communities in the southern Appalachian Mountains, USA. *Canadian Journal of Forest Research* 36: 710-718.

Bunn, W.A., M.A. Jenkins, C.B. Brown, and N.J. Sanders. 2010. Temporal change within and among montane forest communities: the influence of historic disturbance and environmental gradients. *Ecography* 33: 425-434.

Busing, R.T. 1994. Canopy cover and tree regeneration in old-growth cove forests of the Appalachian Mountains. *Vegetatio* 115: 19-27.

- Busing, R.T., E.E.C. Clebsch, C.C. Eagar, and E.F. Pauley. 1988. Two decades of change in a Great Smoky Mountains spruce–fir forest. *Bulletin of the Torrey Botanical Club* 115:25–31.
- Cohen, D., B. Dellinger, R. Klein, and B. Buchanan. 2007. Patterns in lightning-caused fires at Great Smoky Mountains National Park. *Fire Ecology* 3: 68–82.
- Delcourt, H. R. and P. A. Delcourt. 1997. Pre-Columbian Native American use of fire on southern Appalachian landscapes. *Conservation Biology* 11:1010–1014.
- Elliott, K.J., R.L. Hendrick, A.E. Major, J.M. Vose, and W.T. Swank. 1999. Vegetation dynamics after a prescribed fire in the southern Appalachians. *Forest Ecology and Management* 114: 199–213.
- Harmon, M.E. 1984. Survival of trees after low-intensity surface fires in Great Smoky Mountains National Park. *Ecology* 65:796–802.
- Ford C. R. and J.M. Vose. 2007. *Tsuga canadensis* (L.) Carr. mortality will impact hydrologic processes in southern Appalachian forest ecosystems. *Ecological Applications* 17:1156–1167.
- Harmon, M. E. 1982. Fire history of the westernmost portion of the Great Smoky Mountains National Park. *Bulletin of the Torrey Botanical Club* 109: 74–79.
- Harmon, M. E., S. P. Bratton, and P. S. White. 1983. Disturbance and vegetation response in relation to environmental gradients in the Great Smoky Mountains. *Vegetatio* 55: 129–139.
- Harrod, J. C., M.E. Harmon, and P.S. White. 2000. Post-fire succession and 20th century reduction in fire frequency on xeric southern Appalachian sites. *Journal of Vegetation Science* 11: 465–472.
- Harrod, J., P. S. White, and M. E. Harmon. 1998. Changes in xeric forests in western Great Smoky Mountains National Park, 1936–1995. *Castanea* 63:346–360.
- Hayes, M., A. Moody, P. S. White, and J. L. Costanza. 2007. The influence of logging and topography on the distribution of spruce-fir forests near their Southern limits in Great Smoky Mountains National Park, USA. *Plant Ecology* 189:59–70.
- Holzmüller, E.J., S. Jose, and M.A. Jenkins. 2008. The relationship between fire history and an exotic fungal disease in a deciduous forest. *Oecologia* 155: 347–356.
- Holzmüller, E.J., S. Jose, and M.A. Jenkins. 2010. Ecological consequences of an exotic fungal disease in eastern hardwood forests. *Forest Ecology and Management* 259: 1347–1353.
- Jenkins, M.A. 2007. Vegetation communities of Great Smoky Mountains National Park. *Southeastern Naturalist* 6 (Special Issue 1): 35–56.
- Jenkins, M.A. and K.D. Johnson. 2009. Exotic plant species invasion and control in Great Smoky Mountains National Park, USA. Pages 295–322 in *Invasive Plants and Forest Ecosystems*, R.K. Kohli, S. Jose, H.R. Singh, and D.R. Batish, eds. CRC Press-Taylor and Francis Group, Boca Raton, FL.
- Jenkins, M.A., S. Jose, and P.S. White. 2007. Impacts of an exotic disease and vegetation change on foliar calcium cycling in Appalachian forests. *Ecological Applications* 17: 869–881.
- Jenkins, M.A. and C.R. Webster. 2009. Spatial patterning and population structure of a common woodland herb, *Trillium erectum*, in primary and post-logging secondary forests. *Forest Ecology and Management* 258: 2569–2577.
- Jenkins, M.A., C.R. Webster, and J.R. Rock. 2007. Effects of chronic herbivory and historic land use on population structure of a forest perennial, *Trillium catesbaei*. *Applied Vegetation Science* 10: 441–450.
- Kincaid, J.A. and A. J. Parker, 2008. Structural characteristics and canopy dynamics of *Tsuga canadensis* in forests of the southern Appalachian Mountains, U.S.A. *Plant Ecology* 199:265–280.
- Kitamura, K., K. Homma, H. Takasu, S. Hagiwara, F. H. Utech, D. F. Whigham, and S. Kowano. 2001. Demographic genetics of the American beech, *Fagus grandifolia*. II. Genet substructure of populations for the Blue Ridge, Piedmont and Great Smoky Mountains. *Plant Species Biology* 16:219–230.

- Morris, A. B., R. L. Small, and M.B. Cruzan. 2002. Investigating the relationship between *Cryptococcus fagisuga* and *Fagus grandifolia* in Great Smoky Mountains National Park." *Southeastern Naturalist* 1: 415-424.
- Morris A.B., R.L. Small, and M.B. Cruzan. 2004. Variation in frequency of clonal reproduction among populations of *Fagus grandifolia* Ehrh. in response to disturbance. *Castanea* 69: 38-51.
- Nicholas N.S., S.M. Zedaker, C. Eagar, and F.T. Bonner. 1992. Seedling recruitment and stand regeneration in spruce-fir forests of the Great Smoky Mountains. *Bulletin of the Torrey Botanical Club* 119: 289-299.
- Price CA and J.F. Weltzin. 2003. Managing non-native plant populations through intensive plant community restoration in Cades Cove, Great Smoky Mountains National Park, USA. *Restoration Ecology* 11:351-58.
- Pyle, C. 1988. The type and extent of anthropogenic vegetation disturbance in the Great Smoky Mountains before National Park Service acquisition. *Castanea* 53:225-235.
- Singer, F.J., Swank, W. T., Clebsch, E. E. C. 1984. Effects of wild pig rooting in a deciduous forest. *Journal Wildlife Management* 48:464-73
- Russell, N. H. 1953. The beech gaps of the Great Smoky Mountains. *Ecology* 34:366-374.
- Simons, T.R., S.A. Shriner, and G.L. Farnsworth. 2006. Comparison of breeding bird and vegetation communities in primary and secondary forests of Great Smoky Mountains National Park. *Biological Conservation* 129: 302-311.
- Thiemann J.A., C.R. Webster, M.A. Jenkins, P.M. Hurley, J.H. Rock, and P.S. White. 2009. Herbaceous-layer impoverishment in a post-agricultural southern Appalachian landscape. *American Midland Naturalist* 162: 148-168.
- Weathers, K.C., S.M. Simkin, G.M. Lovett, and S.E. Lindberg. 2006. Empirical modeling of atmospheric deposition in mountainous landscapes. *Ecological Applications* 16: 1590-1607.
- Webster, C.R., J.H. Rock, R.E. Froese, and M.A. Jenkins. 2008. Drought-herbivory interaction disrupts competitive displacement of native plants by *Microstegium vimineum*, 10 year results. *Oecologia* 157: 497-50.
- Webster, C.R., M.A. Jenkins, and S. Jose. 2006. Woody invaders and the challenges they pose to forest ecosystems in the eastern United States. *Journal of Forestry* 104: 366-374.
- Webster, C.R., M.A. Jenkins, and J.H. Rock. 2005. Long-term response of spring flora to chronic herbivory and deer exclusion in Great Smoky Mountains National Park, USA. *Biological Conservation* 125: 297-307.
- White, P. S., S. P. Wilds, and D. A. Stratton. 2001. The distribution of heath balds in the Great Smoky Mountains, North Carolina and Tennessee. *Journal of Vegetation Science* 12: 453-466.
- Whittaker, R. H. 1956. Vegetation of the Great Smoky Mountains. *Ecological Monographs* 26:1-80.
- Woods, F.W. and R.E. Shanks. 1959. Natural replacement of chestnut by other species. *Ecology* 40: 349-361.
- Young, T. 2006. False, cheap and degraded: when history, economy and environment collided at Cades Cove, Great Smoky Mountains National Park. *Journal of Historical Geography* 32: 169-89.
- Zobel, D. B. 1969. Factors affecting the distribution of *Pinus pungens*, an Appalachian endemic. *Ecological Monographs* 39:303-333.

O. Library Resources:

The required book chapters for this class are put on reserve at the Lily Life Sciences Library. This class also makes extensive use of the ejournals provided by Purdue Libraries.

**Department of Horticulture and Landscape Architecture
Proposed Course and Curricular Changes**

A. COURSES TO BE DELETED

None

B. COURSES TO BE ADDED

FS 50600/HORT 50600 COMMERCIAL GRAPE AND WINE PRODUCTION

Sem. 1. Class 2, lab 2, cr. 3. Prerequisites: Student must (i) be at least 21 years when the course commences (ii) have academic advisor's and instructors' **approval** to enroll in the course. Prior or concurrent attendance of FS 47000 *Wine Appreciation* is strongly recommended.

Advanced enology and viticulture; scientific principles of viticulture and enology and the practices of commercial grape growing and winemaking.

Justification: As Midwestern agriculture is diversifying, almost three hundred wineries have sprung up in the tri-state area of Indiana, Michigan and Ohio alone. At the local food and wine industries are growing rapidly, demand for trained winegrowers and winemakers is on the rise proportionally. In response, the Purdue Wine Grape Team, a group of scientists and cooperative extension specialists, has been teaching a new food science class to graduate and undergraduate students as well as members of the wine industry. The Commercial Grape and Wine Production course is a semester-long combination of lectures and hands-on training in the field during the grape harvest: The Department of Food Science's pilot winery features commercial-grade winemaking equipment and the Department of Horticulture and Landscape Architecture's experimental vineyards are home to more than seventy grape varieties. The class is co-taught by Christian Butzke, professor of enology – the science of wine and winemaking, and Bruce Bordelon, professor of viticulture - the science of grape cultivation. The students study professional grape growing and wine production with an emphasis on Midwestern climates, adapted varieties, and recommended wine styles. Students will learn the scientific principles of viticulture and enology and the practices of commercial grape growing and winemaking

This advanced enology and viticulture class is designed mainly, but not exclusively for graduate students in the College of Agriculture. The class is limited to 12 students to optimize the time for direct interactions with the instructors and due to limitations on equipment in laboratory and pilot winery. This is an intense applied science class that requires a solid understanding of various scientific disciplines, including biological, organic and physical chemistry, microbiology, chemical engineering, horticulture and plant biology.

Impact on Learning Outcomes: Students will receive a comprehensive education about the principles and practices of commercial grape and wine production. Their learning outcomes will be assessed by testing their ability to solve a range of real-life production problems in class discussions and the final exam, as well as by judging their skill set to produce a batch of commercially acceptable wine from vineyard to bottle.

Supporting Documents – Pages 3-5.

C. COURSES TO BE CHANGED

None.

D. CURRICULAR CHANGES

None.

College of Agriculture
Supporting Document for a New Course

FS 50600/HORT 50600 COMMERCIAL GRAPE AND WINE PRODUCTION

A. Justification for the Course:

As Midwestern agriculture is diversifying, almost three hundred wineries have sprung up in the tri-state area of Indiana, Michigan and Ohio alone. At the local food and wine industries are growing rapidly, demand for trained winegrowers and winemakers is on the rise proportionally. In response, the Purdue Wine Grape Team, a group of scientists and cooperative extension specialists, has been teaching a new food science class to graduate and undergraduate students as well as members of the wine industry. The Commercial Grape and Wine Production course is a semester-long combination of lectures and hands-on training in the field during the grape harvest: The Department of Food Science's pilot winery features commercial-grade winemaking equipment and the Department of Horticulture and Landscape Architecture's experimental vineyards are home to more than seventy grape varieties. The class is co-taught by Christian Butzke, professor of enology – the science of wine and winemaking, and Bruce Bordelon, professor of viticulture - the science of grape cultivation. The students study professional grape growing and wine production with an emphasis on Midwestern climates, adapted varieties, and recommended wine styles. Students will learn the scientific principles of viticulture and enology and the practices of commercial grape growing and winemaking

This advanced enology and viticulture class is designed mainly, but not exclusively for graduate students in the College of Agriculture. The class is limited to 12 students to optimize the time for direct interactions with the instructors and due to limitations on equipment in laboratory and pilot winery. This is an intense applied science class that requires a solid understanding of various scientific disciplines, including biological, organic and physical chemistry, microbiology, chemical engineering, horticulture and plant biology.

B. Learning Outcomes and Method of Evaluation or Assessment:

Students will receive a comprehensive education about the principles and practices of commercial grape and wine production. Their learning outcomes will be assessed by testing their ability to solve a range of real-life production problems in class discussions and the final exam, as well as by judging their skill set to produce a batch of commercially acceptable wine from vineyard to bottle.

Criteria

1. Attendance and Class Participation (40 points):

- Attendance is mandatory.
- Excused absences only cover personal emergencies, such as acute illness, accidents, or death in the family, as well as US military service and religious observations, but need to be *documented*.
- Unexcused absences include job interviews or fairs, ALL university events or projects related to other classes, Greek or sports activities, etc.
- Two unexcused absences will automatically drop final grade by one letter.

2. Assignments (30 points):

- **Winemaking Project (20 points)**
 - i. Students produce their own batch of experimental wine from vineyard to bottle.
- **Readings in Viticulture and Enology (10 points)**
 - ii. Review various topic-related articles from scientific and trade journals prior to class.

3. Examinations (30 points)

- There will a final exam, counting for 30% of the final grade.

Scoring and Grading:

- Class participation credits40 Points
- Class assignments30 Points
- Final exam30 Points
- Final grading scale for class
 - Combined grade of 90 – 110 Points **A**
 - 80 – 89.99 Points **B**
 - 70 – 79.99 Points **C**
 - 60 – 69.99 Points **D**
 - below 60 Points **F**

Method of Instruction

- Lecture and lab combination that meets once per week for 4 hours for 16 weeks.
- Hands-on experiential learning during approximately one-half of the course.

C. Prerequisites:

Students must be at least 21 years of age and have your academic advisor's and our consent in order to take this course. Prior or concurrent attendance of FS 470 Wine Appreciation is strongly recommended.

D. Course Instructors:

- *Provide the name, rank, and department/program affiliation of the instructors.*
 - 1) Christian Butzke, Professor of Enology, FS
 - 2) Bruce Bordelon, Professor of Viticulture, HLA
- *Are the instructors currently a member of the Graduate Faculty?*
YES

E. Course Outline:

- Viticulture topics:
 - 1) Impact of climates and soils on variety selection
 - 2) Vineyard establishment
 - 3) Vine training
 - 4) Canopy management
 - 5) Pest management
 - 6) Fruit quality evaluations

- Enology topics:
 - 1) Winery equipment choices
 - 2) Winery sanitation
 - 3) Yeast and bacteria preparation
 - 4) White, red, sparkling, fruit, and dessert winemaking techniques
 - 5) Oak cooperage
 - 6) Fining and stabilization
 - 7) Wine sensory evaluation, blending and troubleshooting
 - 8) Filtration, bottling and closures
 - 9) Wine analyses and winery quality systems

F. Reading List (including course text):

- 1) Winemaking Problems Solved. Christian E. Butzke (Editor). Woodhead Publishing (2010).
- 2) Midwest Grape Production Guide. Imed Dami, Bruce P. Bordelon, et al. Ohio State University Extension (2005).
- 3) Wine Appreciation. Christian E. Butzke. Kendall-Hunt Publishing (2010).
- 4) Principles and Practices of Winemaking by Roger B. Boulton, Vernon L. Singleton, Linda F. Bisson, and Ralph E. Kunkee. Springer; 1st edition (1996).

G. Library Resources

N/A.

H. Example of a Course Syllabus

Please see Food Science supporting documents.

**Natural Resources and Environmental Science
Proposed Course and Curricular Changes**

A. COURSES TO BE DELETED

None

B. COURSES TO BE ADDED

None

C. COURSES TO BE CHANGED

None

D. CURRICULAR CHANGES

1. NRES Minor

a. Deletions.

i. Required Transformational Experience (3 hr)

This requirement was removed because very few majors require a transformational experience, and students were growing confused and concerned about the requirement.

ii. FNR 20300 Freshwater Ecology.

This course currently is not being offered due to changes in staffing in Forestry and Natural Resources.

iii. ENTM 46000 Aquatic Entomology

This course currently is not being offered due to changes in staffing in Entomology.

iv. POL 32300 Comparative Environmental Policy

This course currently is not being offered due to changes in staffing in Political Science

b. Additions.

i. General Environmental Science list of selectives (choose one):

1. NRES 25500 Soil Science
2. NRES 23000 Survey of Meteorology
3. POL 22300 Environmental Policy

This list of selectives was added to replace the deleted transformational experience.

ii. Ecology selectives

1. Marine Biology

Replaces the deleted FNR 20300

iii. Policy and Economics selectives

1. POL 32700 Global Green Politics
Replaces POL 32300
 - iv. Land Resources selectives
 1. Updated prerequisites for ABE 32500
 - v. Water Quality selectives
 1. Added FNR 210 Natural Resource Information Management
Replaces the deleted ENTM 46000
 2. Updated ABE 32500 prerequisites
2. Sustainable Environments Minor
 - a. Deletions.
 - i. Required Transformational Experience (3 hr)
This requirement was removed because very few majors require a transformational experience, and students were growing confused and concerned about the requirement.
 - b. Additions.
 - i. FNR 37500 Human Dimensions of Natural Resource Management
Adds another relevant course to offset the loss of hours from the deletion of the Transformational Experience

APPENDIX 1. NRES MINOR (CURRENT)

Natural Resources and Environmental Science Minor -- 15 credits

REQUIRED COURSES (3 hr)

Dept.	Number	Hrs	Title	Semester	Prerequisites
NRES	29000	3	Introduction to Environmental Science	F	

REQUIRED TRANSFORMATIONAL EXPERIENCE (3 hr)

Hrs	Description
3	Students will complete at least three hours of a transformative experience that can include an internship, undergraduate research, community service, or study abroad. The experience must be closely related to environmental science and approved by the NRES Director.

SELECTIVES (9 hr)*

Dept.	Number	Hrs	Title	Semester	Prerequisites
<u>Ecology Emphasis</u>					
AGRY	34900	3	Soil Ecology	F	(BIOL 11000 or BIOL 22600 and BIOL 11100 or BIOL 22500 -) or (BIOL 11000 or BIOL 22600 and BTNY 21000) or (BIOL 11100 or BIOL 22500 and BTNY 21000) or (BIOL 12100 and BIOL 13100) or (BTNY 21000 and HORT 30100)
BIOL	48300	3	Environmental And Conservation Biology	F	
ENTM	31100	3	Insect Ecology	S	
FNR	20300	3	Freshwater Ecology	F	
<u>Policy and Economic Emphasis</u>					
AGEC	40600	3	Nat'l Resource & Environ. Economics	F,S	AGEC 10000 or AGECE 20300 or ECON 25100 or ECON E1030 or ECON E2010 or AGECE 20400 or AGECE 20400 or AGECE 20300 or ECON 25100 or ECON 25100
FNR	36500	3	Nat'l Resources Issues, Policy, Admin.	F	
POL	32300	3	Comparative Environmental Policy	F,S,Su	
<u>Land Resources Emphasis</u>					
ABE	32500	3	Soil And Water Resource Engineering	F	
AGRY	33700	3	Environmental Hydrology	S	
NRES	38500	3	Environmental Soil Chemistry	F	(AGRY 25500 or NRES 25500 or AGRY 27000) and (CHM 11200 or CHM 11600 or CHM 12400 or CHM 11000 or CHM 12600 or CHM 13600) or (CHEM C1020 and CHEM C1220) or (CHEM C1060 and CHEM C1260)
ASM	33600	3	Environmental Systems Management	F	ASM 10500or ASM 23100 or ASM 49100 or (ASM 10400 and AGECE 20200)
<u>Sustainability Emphasis</u>					
AD	39700	3	Sustainability in the Built Environment	F,S	
BCM	41900	3	Sustainable Construction	F,S,Su	
CE	35500	3	Engineering Environmental Sustainability	S	
<u>Water Quality Emphasis</u>					
ABE	325	3	Soil and Water Resource Engineering	F	
AGRY	337	3	Environmental Hydrology	S	
ENTM	460	3	Aquatic Entomology	S	

*At least one course must be selected from a minimum of 3 emphasis areas

APPENDIX 2. NRES MINOR (PROPOSED)

Natural Resources and Environmental Science Minor -- 15 credits

REQUIRED COURSES (3 hr)

Dept.	Number	Hrs	Title	Semester	Prerequisites
NRES	29000	3	Introduction to Environmental Science	F	

SELECTIVES (12 hr)*

Dept.	Number	Hrs	Title	Semester	Prerequisites
<u>General Environmental Science</u>					
FNR	21000	3	Natural Resource Information Management	S	
NRES	25500	3	Soil Science	F,S	(CHM 11200 or CHM 11600 or CHM 12400 or CHM 11000 or CHM 12600 or CHM 13600) or (CHEM C1020 and CHEM C1220) or (CHEM C1060 and CHEM C1260)
NRES	23000	3	Survey of Meteorology	S	
POL	22300	3	Introduction to Environmental Policy	F,S	
<u>Ecology Emphasis</u>					
AGRY	34900	3	Soil Ecology	F	(BIOL 11000 or BIOL 22600 and BIOL 11100 or BIOL 22500 -) or (BIOL 11000 or BIOL 22600 and BTNY 21000) or (BIOL 11100 or BIOL 22500 and BTNY 21000) or (BIOL 12100 and BIOL 13100) or (BTNY 21000 and HORT 30100)
BIOL	48300	3	Environmental And Conservation Biology	F	(BIOL 11000 and BIOL 11100) or BIOL 12100 or BIOL 28600
ENTM	31100	3	Insect Ecology	S	
<u>Policy and Economics Emphasis</u>					
AGEC	40600	3	Nat'l Resource & Environ. Economics	F,S	AGEC 10000 or AGECE 20300 or ECON 25100 or ECON E1030 or ECON E2010 or AGECE 20400 or AGECE 20400 or AGECE 20300 or ECON 25100 or ECON 25100
FNR	36500	3	Nat'l Resources Issues, Policy, Admin.	F	
POL	32700	3	Global Green Politics	F,S,Su	
<u>Land Resources Emphasis</u>					
ABE	32500	4	Soil And Water Resource Engineering	F	NRES 25500 and (ME 20900 or (CE 34000 and 34300)
AGRY	33700	3	Environmental Hydrology	S	
NRES	38500	4	Environmental Soil Chemistry	F	(AGRY 25500 or NRES 25500 or AGRY 27000) and (CHM 11200 or CHM 11600 or CHM 12400 or CHM 11000 or CHM 12600 or CHM 13600) or (CHEM C1020 and CHEM C1220) or (CHEM C1060 and CHEM C1260)
ASM	33600	3	Environmental Systems Management	F	ASM 10500or ASM 23100 or ASM 49100 or (ASM 10400 and AGECE 20200)
<u>Sustainability Emphasis</u>					
AD	39700	3	Sustainability in the Built Environment	F,S	
BCM	41900	3	Sustainable Construction	F,S,Su	
CE	35500	3	Engineering Environmental Sustainability	S	
<u>Water Quality Emphasis</u>					
ABE	32500	3	Soil and Water Resource Engineering	F	NRES 25500 and (ME 20900 or (CE 34000 and 34300)
AGRY	33700	3	Environmental Hydrology	S	
FNR	20100	3	Marine Biology	F	BIOL 11000 or BIOL 12100

*At least one course must be selected from a minimum of 4 emphasis areas

APPENDIX 3. SUSTAINABLE ENVIRONMENTS MINOR (CURRENT)

Sustainable Environments Minor

REQUIRED COURSES (3 hr)

Dept.	Number	Hours	Title	Semester	Prerequisites
NRES	29000	3	Introduction to Environmental Science	F	

REQUIRED TRANSFORMATIONAL EXPERIENCE (3 hr)

Hours	Description
3	Students will complete at least three hours of a transformative experience that can include an internship, undergraduate research, community service, or travel abroad. The experience must be closely related to sustainability and approved by the NRES Director.

SELECTIVES (9 hr)

Dept.	Number	Hours	Title	Semester	Prerequisites
AD	39700	3	Sustainability in the Built Environment	F,S	
AGRY	57500	3	Soil And Nutrient Management	F (odd years)	AGRY 25500/NRES 25500
ASM	33600	3	Environmental Systems Management	F	ASM 10500 or ASM 23100 or ASM 49100 or (ASM 10400 and AGECE 20200)
BCM	41900	3	Sustainable Construction	F,S,Su	
BIOL	48300	3	Environmental And Conservation Biology	F	BIOL 11000 or BIOL 22600 or BIOL 11100 or BIOL 22500 or BIOL 12100 or BIOL 28600 or BIOL 28000 or BIOL 58500 or BIOL 24100
CE	35500	3	Engineering Environmental Sustainability	S	
FNR	40800	3	Natural Resources Planning	S	(FNR 40600 or AGECE 40600) and (FNR 34100 or FNR 40900 or FNR 54500 or FNR 54700) and FNR 37500
HORT	44200	1	Sustainability In The Managed Landscape	S (even years)	HORT 21700 or HORT 21800 or FNR 22500
POL	32700	3	Global Green Politics	F,S,Su	

APPENDIX 4. SUSTAINABLE ENVIRONMENTS MINOR (PROPOSED)

Sustainable Environments Minor

REQUIRED COURSES (3 hr)

Dept.	Number	Hours	Title	Semester	Prerequisites
NRES	29000	3	Introduction to Environmental Science	F	

SELECTIVES (12 hr)

Dept.	Number	Hours	Title	Semester	Prerequisites
AD	39700	3	Sustainability in the Built Environment	F,S	
AGRY	57500	3	Soil And Nutrient Management	F (odd years)	AGRY 25500/NRES 25500
ASM	33600	3	Environmental Systems Management	F	ASM 10500 or ASM 23100 or ASM 49100 or (ASM 10400 and AGECE 20200)
BCM	41900	3	Sustainable Construction	F,S,Su	
BIOL	48300	3	Environmental And Conservation Biology	F	BIOL 11000 or BIOL 22600 or BIOL 11100 or BIOL 22500 or BIOL 12100 or BIOL 28600 or BIOL 28000 or BIOL 58500 or BIOL 24100
CE	35500	3	Engineering Environmental Sustainability	S	
FNR	37500	3	Human Dimensions of Natural Resource Mgmt	S	FNR 36500 or AGECE 525 or POL 223 or POLS Y3130 or POL 32300 POL 42300 or POL 52300
FNR	40800	3	Natural Resources Planning	S	(FNR 40600 or AGECE 40600) and (FNR 34100 or FNR 40900 or FNR 54500 or FNR 54700) and FNR 37500
HORT	44200	1	Sustainability In The Managed Landscape	S (even years)	HORT 21700 or HORT 21800 or FNR 22500
POL	32700	3	Global Green Politics	F,S,Su	

**Department of Youth Development and Agricultural Education
Proposed Course and Curricular Changes**

A. COURSES TO BE DELETED

None

B. COURSES TO BE ADDED

None

C. COURSES TO BE CHANGED

None

D. CURRICULAR CHANGES

Change selectives for Agricultural Education major.

I. SUMMARY OF PROPOSED CHANGES

Delete	Credit hours	Add	Credit hours
Choose from: AGECE 20300, AGECE 31000, AGECE 33000	3	Choose from: AGECE 31000, AGECE 3300	3
Choose an FNR or NRES selective	3	Required: FNR 10300	3
Choose from ASM 10400, ASM 20100	3	Required: ASM 20100	3
Choose from FS 16100, ANSC 35100	3	Required: FS 16100	3
Choose from among listed selectives (list too big to copy here)	15	Choose from among listed selectives (list too big to copy here)	12
		Required: ANSC 10200	3
Total Credits Deleted	27	Total Credits Added	27

II. JUSTIFICATION FOR PROPOSED CHANGES

New *Indiana Content Standards for Educators: Career and Technical Education-Agriculture* were disseminated by the Indiana Department of Education in December 2010. In 2011 instructors of the current required and restricted selective courses mapped their courses to the new standards and indicators. The Agricultural Education program reviewed the mapping matrix for gaps and redundancies. These changes are to meet the new content standards.

Impact on Learning Outcomes

The program area reviewed the Departmental outcome matrix for this major. Outcomes related to knowledge of subject matter are more clearly addressed by these changes.

College of Agriculture: Professional Preparation: Demonstrate proficiency in their chosen discipline that incorporates knowledge, skills, technology, and ethics.

Agricultural Education: The teacher plans instruction based upon knowledge of subject matter, students, the community, and curriculum goals.

SUPPORTING DOCUMENT 1: Changed Agricultural Education Plan of Study

Freshmen Year

<i>First Semester</i>	<i>Second Semester</i>
(3) AGEC 21700 (Economics)	(3) COM 11400 (Fundamentals of Speech Communication)
(0.5) AGR 10100 (Introduction to the College of Agriculture and Purdue University)	(4) ENGL 10600 (First-Year Composition)
(0.5) AGR 12100 (Introduction to Youth Development and Agricultural Education Academic Programs)	(4) Biological sciences selective
(3) EDCI 27000 (Introduction to Educational Technology and Computing)	(3) FNR 10300 (Intro Enviro Conserv)
(3) HORT 10100 (Fundamentals of Horticulture)	(3) ANSC 10200 (Intro Animal Agric)
(4) Biological sciences selective	(17)
(14)	

Sophomore Year

<i>First Semester</i>	<i>Second Semester</i>
(3) CHM 11100 (General Chemistry)	(3) CHM 11200 (General Chemistry)
(3) EDCI 20500 (Exploring Teaching as a Career)	(3) EDPS 23500 (Learning / Motivation)
(3) EDCI 28500 (Multiculturalism and Education)	(3) EDPS 26500 (Inclusive Classroom)
(3) Agricultural economics selective	(2) ENTM 20600 (General Entomology)
(3) Calculus selective	(1) ENTM 20700 (Gen Entomology Lab)
(3) Welding transfer credits	(3) HORT 20100 (Plant Propagation)
(18)	(3) Technical agriculture selective
	(18)

Junior Year

<i>First Semester</i>	<i>Second Semester</i>
(3) AGRY 25500 (Soil Science)	(3) AGRY 37500 (Crop Prod Systems)
(3) AGRY 32000 (Genetics)	(3) ANSC 22100 (Animal Nutrition)
(3) ASM 20100 (Construction and Maintenance)	(3) YDAE 31900 (Plan Agric Science and Business Programs)
(3) EDST 20000 (History and Philosophy of Education)	(1) YDAE 44100 (Field Experience in Agricultural Education Programs)
(3) YDAE 31800 (Coordination of Supervised Agricultural Experience Program)	(3) Social science or humanities selective (30000+ level)
(3) Technical agriculture selective	(3) Technical agriculture selective
(18)	(16)

Senior Year

<i>First Semester</i>	<i>Second Semester</i>
(3) FS 16100 (Science of Food)	(12) EDCI 49800 (Supervised Teaching of Agricultural Education)
(3) YDAE 44000 (Methods of Teaching Agricultural Education)	(2) Electives
(3) Humanities selective	(14)
(3) International understanding selective	
(3) Statistics selective	
(3) Technical agriculture selective	
(18)	

**Curriculum and Student Relations Committee
Proposed Curricular Changes**

I. PROPOSAL TO CHANGE DEAN'S SCHOLARS PROGRAM TO A CERTIFICATE OFFERING

From: Dean's Scholars Program – Academic Concentration

Program: Animal Sciences-BS
College: College of Agriculture
Campus: West Lafayette
Major: Animal Science
Concentration: Deans Scholar Program

To: Dean's Scholars Program – Certificate Program

Program: Dean's Scholar-Cert
College: College of Agriculture
Campus: West Lafayette
Major: Dean's Scholars Program

RATIONALE:

When the Dean's Scholars Program was entered into the University academic record on March 30, 2006, it was established as an "Endorsement" rather than a "Concentration." With the transition to Banner in July of 2008, the significant programmatic limitations of the software no longer permitted the use of the term "Endorsement." The choices at that time were "Minor" or "Concentration." While the Dean's Scholars Program was established neither as an academic minor, nor an academic concentration within a major, the term "Concentration" was selected in the transition to Banner.

Within the University academic record system, programs are identified at the BS, AS, and Certificate levels. Individuals who successfully complete a certificate program are awarded a certificate in an academic folder in the same manner as a diploma is awarded for successful completion of the Bachelor of Science degree. Both the Bachelor of Science degree program and the Certificate program will be posted to the student's academic transcript.

II. PROPOSAL TO CHANGE LEADERSHIP DEVELOPMENT CERTIFICAT PROGRAM TO A CERTIFICATE OFFERING

From: Leadership Development Program – Academic Concentration

Program: Animal Sciences-BS
College: College of Agriculture
Campus: West Lafayette
Major: Animal Science
Concentration: Leadership Development Program

To: Leadership Development Program – Certificate Program

Program: Leadership Development Program-Cert
College: College of Agriculture
Campus: West Lafayette
Major: Leadership Development Program

RATIONALE:

When the Leadership Development Program was entered into the University academic record on March 30, 2006, it was established as an “Endorsement” rather than a “Concentration.” With the transition to Banner in July of 2008, the significant programmatic limitations of the software no longer permitted the use of the term “Endorsement.” The choices at that time were “Minor” or “Concentration.” While the Leadership Development Program was established neither as an academic minor, nor an academic concentration within a major, the term “Concentration” was selected in the transition to Banner.

Within the University academic record system, programs are identified at the BS, AS, and Certificate levels. Individuals who successfully complete a certificate program are awarded a certificate in an academic folder in the same manner as a diploma is awarded for successful completion of the Bachelor of Science degree. Both the Bachelor of Science degree program and the Certificate program will be posted to the student’s academic transcript.

III. REPORT OF CORE CURRICULAR CHANGES - [For Information Only]

International Understanding Selectives – Additions to the approved list.

(3) **PHIL 11000** (Introduction to Philosophy)

(3) **POL 32700** (Global Green Politics)

Multicultural Awareness Selectives – Addition to the approved list.

(3) **COM 36800** (Sociolinguistic Study of African American English)

IV. USE OF ADVANCED PLACEMENT (AP) CREDITS – SCORE OF (3) - [For Information Only]

The State of Indiana has mandated that scores of (3) on College Entrance Examination Board (CEEB) Advanced Placement (AP) tests be used in plans of study. The Curriculum and Student Relations Committee approved the following applications for selected Advanced Placement credits in College of Agriculture plans of study.

AP Subject	Purdue Equivalent	Use in College of Agriculture Plans of Study
Biology	(3) BIOL 1XXXX	Elective*
Calculus AB	(3) MA 1XXXX	MA 22000 or elective
Calculus BC	(3) MA 1XXXX	MA 22000 or elective
English Language and Composition	(3) ENGL 1XXXX	ENGL 10100**
English Literature and Composition	(3) ENGL 1XXXX	Humanities Selective
Environmental Science	(3) EAS 1XXXX	Elective*
Human Geography	(3) EAS 1XXXX	Elective*
Macroeconomics	(3) ECON 1XXXX	Social Science Selective
Microeconomics	(3) ECON 1XXXX	Social Science Selective
Physics	(3) PHYS 1XXXX	PHYS 21400 or elective
Physics C - Electricity	(3) PHYS 1XXXX	PHYS 21400 or elective
Physics C - Mechanics	(3) PHYS 1XXXX	PHYS 21400 or elective
Psychology	(3) PSY 1XXXX	Social Science Selective
Statistics	(3) STAT 1XXXX	Elective*

* Credits are not applicable in satisfying Mathematics and Sciences core requirements.

** To fulfill Written and Oral Communication core requirements, the student must also complete COM 11400, and six credits of COM 20000+ or ENGL 20000+ level courses.

College of Agriculture

2012 May Graduation Candidate Roster

As of April 2, 2012

Subject to the approval of the Agricultural Faculty, the following graduation candidates who complete degree requirements during the current semester will be recommended to the Board of Trustees to receive their degrees as of May 5, 2012, and the candidates who complete degree requirements during the Summer Session will be recommended for degrees as of August 3, 2012. Also, the Dean of Agriculture, or his designee shall be authorized to act for the faculty regarding the certification of qualified candidates.

NAME	MAJOR- 1	MAJOR- 2	MINOR- 1	MINOR- 2	MINOR- 3	CONC-1	CONC-2	CONC-3	DEGREE
BACHELOR OF SCIENCE									
Adkins, Molly A.	AGMG		HIST						BS
Albright, Kira L.	NREV		SOIL	EEE					BS
Albright, Nicolette C.	PUHT		EEE						BS
Anslinger, Catherine L.	FDSC								BS
Arndt, Melissa M.	FDSC								BS
Ash, Jordan R.	FDSC								BS
Atchley, Thomas R.	AGMG								BS
Atwell, Talon B.	APMT								BS
Bacon, Jacob K.	AGED								BS
Baker, Angela L.	FDSC								BS
Baliles, Justin B.	NREV								BS
Balzer, Ashtin S.	AGED		FRSC						BS
Barber, Malcolm E.	ANSC					BISC			BS
Bare, Michael A.	SLMK		CS						BS
Barnard, Kristina M.	AGMG								BS
Bayer, Emilee L.	ANAG		FDAG						BS
Bazan, Alexandro	NREV		EEE	ENPP	SUEV				BS
Beasley, Samuel E.	AGMG					LDDP			BS
Beeker, Ashley K.	ASM	AGEC	FARM						BS
Berger, Mathew J.	ASM		FDAG						BS
Berry, Joshua W.	PUHT								BS

Berube, Michelle C.	ANSC					BEHV			BS
Besser, Alyssa B.	AGED								BS
Bevis, Crystal M.	WLDL		FAQS	NREV	ANTR				BS
Binion, Jaymee L.	NREV								BS
Birge, Aaron M.	AGEC								BS
Blankenship, Robert T.	ASM		FDAG						BS
Blouzdis, Courtney E.	NRPL		WLFS	FAQS					BS
Bobick, Paul M.	WLDL								BS
Bohlander, Laura K.	AGEC								BS
Bohn, Mathias	CULN	FDSC							BS
Boling, Austin L.	AGMG								BS
Bowman, John J.	AGMG					LDDP			BS
Brackett, Curtis S.	WLDL								BS
Brandyberry, Joe M.	AGMG								BS
Brandyberry, Matthew K.	AGMG								BS
Brooke, Jarred M.	WLDL		SOIL						BS
Brooks, James L.	FDMO		FDAG						BS
Broughton, Megan C.	AGMG		SPNS			LDDP			BS
Brown, Kurtis L.	WLDL								BS
Bryant, Chandler S.	WLDL								BS
Burke, David B.	AGMG								BS
Burke, Nicholas L.	AGMG		OLSV						BS
Buschmann, Sarah E.	ANSC					BEHV			BS
Butler, Lexis R.	FAQS		WLFS						BS
Byers, Leslie A.	AGEC		COMU						BS
Carey, Christina L.	ANSC		BIOS	WLFS		BISC			BS
Carrell, Ellen M.	FIMM		OLSV						BS
Carroll, Tina F.	HPMK		PLBI						BS
Cessna, Kyle M.	AGEC		FDAG						BS
Chalfant, Christopher J.	FARM								BS
Chambers, Steven J.	FDSC								BS
Champ, Ian E.	NREV		ENPP	POL					BS
Cheng, Christopher J.	FDSC								BS
Chestnut, Brandon C.	SLMK								BS
Clark, Amber K.	ANSC					PRMD			BS
Clark, Kelly A.	AGEC								BS

Clark, Taryn R.	WLDL		FAQS	ANSC					BS
Clemens, Kasey L.	HRTS		CRPS	PLBI					BS
Cline, John M.	AGEC								BS
Conrad, Jack M.	ANAG								BS
Cook, Stephen P.	FDSC								BS
Cooper, Neil W.	NREV		SOIL						BS
Costello, Meghan E.	ANSC					BISC			BS
Cotten, Bradley M.	ANSC					PRMD			BS
Council, Mae E.	ANPD		ENGL						BS
Crosby, Kaylin S.	ANSC					BEHV			BS
Cross, Kevin D.	AGED		POL	CRPS					BS
Culp, Kayla S.	AGEC								BS
Culy, Kaitlyn M.	AGED								BS
Czaja, Rebecca C.	WLDL								BS
Dahmen, Stacey E.	BCHM								BS
Daily, Benjamin F.	ASM	AGEC	SPNS	FARM					BS
Davis, Benjamin J.	WLDL	FAQS							BS
Davis, Jordan B.	AGEC								BS
Davis, Caitlin A	ANSC								BS
Davis, Rachel B.	WLDL		OLSV						BS
Dawson, Audrey J.	ASM		FDAG	FARM					BS
Day, Jenna R.	AGEC		INTA						BS
Deitrich, Adam T.	AGEC								BS
De Lucenay, Adam M.	WLDL								BS
Delarosa, Amanda B.	ANSC					BEHV			BS
Demshar, Kirsten L.	AGEC	ANAG							BS
Dennison, Jessica K.	ANSC					PRMD			BS
Dieckmann, Emily M.	AGEC								BS
Diller, John T.	ENTM		FRSC						BS
Dillon, Megan M.	WLDL								BS
Dilts, Charles M.	INAG								BS
Divine, Evan D.	NREV		SOIL						BS
Dodd, Dalton T.	AGEC		OLSV						BS
Driscoll, Bridget M.	HPMK		FDAG						BS
Duckworth, John D.	AGEC		FARM						BS
Duncan, Hillary F.	WLDL								BS

Dyson, Megan N.	AGEC								BS
Echterling, Nicholas S.	WLDL								BS
Ehlerding, Jared M.	ANAG								BS
Eisenhauer, Zachary J.	ENTM								BS
Eisenmann, Neira M.	ANSC		BIOS	WLFS		PRMD			BS
Elsbury, Julie A.	AGED								BS
Emery, Amanda R.	ANSC					PRMD	LDDP		BS
Emery, Emilee M.	ANSC					BEHV			BS
Engler, Sarah M.	ANSC					BEHV	LDDP		BS
Entile, Daniel G.	ASM		FARM						BS
Evans, Kent W.	ASM		FARM						BS
Ewer, Lauren F.	FDSC		OLSV						BS
Farrell, Jennifer H.	FDSC								BS
Federonick, Kara J.	ANSC					BEHV			BS
Feitz, Anthony J.	TURF								BS
Ferch, Ian R.	ASM		FARM						BS
Feston, Jsmes C.	ENTM								BS
Fiechter, Brent D.	AGEC								BS
Fiechter, Jay G.	AGEC		SPNS	INTA					BS
Fischer, Jeff M.	SCRM								BS
Flores Verdad Ixta, Paola	FDSC								BS
Ford, Jordyn M.	NREV								BS
Ford, Quentin D.	ANPR					LDDP			BS
Fowler, Justin M.	WLDL								BS
Franke, Alexander J.	AGEC								BS
Freds, Kara E.	HPMK		FDAG						BS
Freeman, Kelsey J.	FARM								BS
Furey, Megan R.	ANSC					BISC			BS
Furnivall, Corbin B.	WLDL								BS
Garrison, Natalie N.	AGMG								BS
Gault, Brian	NREV		SOIL	OLSV					BS
Gebert, Jennalin D.	SLMK								BS
Gee, Matthew C.	WLDL		FARM						BS
Geis, Jason P.	SCRM								BS
Gerovac, Joshua R.	HPMK		PLBI						BS
Gibson, Jeanne E.	AGCM		FDAG						BS

Goldsmith, Nicholas E.	PLBI					LDDP			BS
Gordon, Evan F.	ASM	AGEC	FDAG	FARM					BS
Graper, Donald J.	AGBM		FARM						BS
Green, Dara A.	NREV		SOIL						BS
Guckien, Evan C.	ASM		FARM						BS
Gustafson, Katlyn M.	ANSC					PRMD			BS
Haley, Bridget K.	ANSC			PSY		BEHV			BS
Hamilton, Matthew T.	WLDL								BS
Hamlin, Heather R.	LAHD								BS
Hamond, Timothy C.	FARM								BS
Hanenburg, Michelle L.	ANSC					PRMD			BS
Hann, Sarah K.	AGCM		HIST						BS
Hardy, Mitchell L.	AGBM								BS
Harmeyer, Joseph A.	ANAG		FDAG						BS
Harris, Jessica S.	FDMO		OLSV	ENGL					BS
Harrison, Amanda R.	ANSC		WLFS	FAQS		BEHV			BS
Hart, Lauren D.	ANSC					BISC			BS
Hartman, Gianna M.	APMT								BS
Hasan, Anna C.	EPLS								BS
Hathaway, Stephanie R.	ENTM								BS
Haynes, Danielle K.	AGEC		ANSC						BS
Henry, Laura K.	BCHM		PSY			DSPG			BS
Higginbottom, Zoe C.	IAGR								BS
Hoeing, Kayla A.	ANPR								BS
Holscher, Josey N.	ANSC					PRMD			BS
Hood, Anna J.	ANSC					PRMD			BS
Horn, Brittaney N.	NREV		SOIL						BS
Horrall, Whitney P.	INAG		FDAG						BS
Hovland, Kallen R.	FDSC								BS
Howe, Kristyn A.	ANSC					PRMD			BS
Hu, Ye	AGFN								BS
Hua, Su	AGEC		ECON	MATH					BS
Hubbell, Kurt A.	ASM		FARM						BS
Huber, Adrienne N.	IAGR					DSPG			BS
Huff, Dylan J.	ANAG								BS
Huh, Jaehoon	FDSC								BS

Hummel, Cara L.	AGED								BS
Hundley, Krista L.	SLMK		COMU	PSY					BS
Hunter, Kyle A.	ANAG								BS
Isgur, Emily A.	ANSC					BISC			BS
Jackson, Katelyn M.	ANSC					PRMD			BS
Jackson, Tyler M.	AGEC								BS
Johnson, Austin J.	PLGB								BS
Johnson, Brandon D.	FDSC								BS
Johnson, Jessica A.	NRPL		WLFS						BS
Johnson, Matthew D.	SLMK		FDAG						BS
Jordan, Sarah K.	AGEC		ANSC			LDDP			BS
Kaiser, Luke C.	AGMG		HIST						BS
Kapitan, Ellen F.	WLDL		OLSV						BS
Kays, Kristen A.	ANSC		SPNS	BIOS		PRMD			BS
Keehn, Holly A.	AGCM		FRSC						BS
Kelich, Mary C.	AGEC		NREV	OLSV	FDAG				BS
Keller, Alicia M.	AGEC					LDDP			BS
Kelly, Sarah J.	WLDL		PSY						BS
Kendall, Jessica N.	WLDL		OLSV						BS
Kerr, Cody S.	AGEC		FARM						BS
Ketron, Joshua M.	NRPL								BS
Kiermaier, Daniel T.	TURF								BS
King, Amanda S.	AGED								BS
King, James R.	WLDL								BS
Kissel, Andrew J.	LAHD								BS
Klinkhamer, Christopher J.	NREV		EEE						BS
Knapik, Randall T.	WLDL								BS
Knebel, Anthony M.	ASM		FARM						BS
Korb, Allison M.	AGED								BS
Kreider, Aaron P.	TURF								BS
Kreider, Keturah D.	ANPR		FDAG						BS
Kresel, Michaelann	AGMG		HORT	SPNS	INTA	LDDP			BS
Kwak, Moon Won	FDSC								BS
La Shure, Brandon A.	ASM		FDAG						BS
Lamkin, Sharon R.	WLDL								BS
Lee, Michael G.	ASM	AGEC	FDAG						BS

Leffel, Kyle A.	WLDL		FAQS						BS
Lehmkuhl, Mary E.	EPLS								BS
Lichtle, Emma M.	ANSC		BIOS			PRMD			BS
Liechty, Rachel A.	ANSC					BEHV			BS
Lipply, Courtney L.	AGCM								BS
Little, Janyne M.	NREV		SOIL	WDSC	PLBI				BS
Liu, Chuhan	FDSC								BS
Liu, Hanyu	LAHD		ARTS						BS
Livengood, Zachary T.	WLDL		FAQS						BS
Loh, Pui Kar	PLBI								BS
Lovasko, Jonathon A.	SLMK								BS
Lynch, Jacqueline R.	ANSC					PRMD			BS
Lyons, Timothy M.	AGEC								BS
Lyttle, Suzanna J.	WLDL		FAQS						BS
Madden, Michelle A.	NREV		PLBI	SOIL					BS
Magiera, Chester L.	ASM		FARM	FDAG					BS
Maish, Alyssa R.	FAQS		WLFS						BS
Makridakis, Anastasia A.	WLDL		ARTD						BS
Manuel, Matthew R.	AGMG								BS
Marsee, Karissa L.	AGEC		FDAG						BS
Marshall, Kristen N.	SLMK		OLSV						BS
Martin, Daniel T.	BCHM	ENTM							BS
Martin, Lisa A.	NREV		WLFS						BS
Martin, Mallory L.	AGCM								BS
Martinez, Eduardo M.	FAQS		CLCS						BS
Mc Carthy, Elaine R.	BCHM		ANSC			DSPG			BS
Mc Clain, Kathryn A.	ANSC					PRMD			BS
Mc Gaughey, Kyle L.	AGBM	SCRM	OLSV						BS
Mc Gee, Carolann M.	ANSC					BEHV			BS
Mc Kibban, Jaclyn R.	ANSC					BEHV			BS
Mc Williams, Andrew S.	ANAG								BS
McCallum, Kyle D.	AGED								BS
Mehan, Laura A.	WLDL								BS
Mehrbrodt, Daniel J.	AGMG								BS
Melton, Chad J.	TURF								BS
Metcalf, Anna J.	AGMG								BS

Michel, Kendra L.	AGMG		ANSC						BS
Miller, Brittany S.	AGEC		SOC						BS
Miller, Kimberly M.	SLMK								BS
Miller, Leanne N.	LAHD		OLSV						BS
Miller, Nikki S.	INAG								BS
Miller, Sonya A.	AGEC								BS
Minissale, Marcus S.	AGMG								BS
Minix, Kayla A.	AGMG		OLSV						BS
Miswan, Zulaika B.	BCHM		FRSC						BS
Moore, Betheny K.	BCHM					DSPG			BS
Moore, Keith L.	INAG		SOC						BS
Morgan, Joseph A.	PLBI								BS
Morman, Laura A.	ANSC					PRMD			BS
Morris, Celeste M.	ANSC					PRMD	LDDP		BS
Morris, Emily R.	ANSC					BEHV			BS
Moseley, Emily A.	ANAG								BS
Mosendz, Sergiy	FDSC								BS
Moss, Taylor M.	WLDL		NREV						BS
Moyers, Devin J.	TURF								BS
Mueller, Kathleen P.	ANAG								BS
Muhlenkamp, Leo J.	ASM		FARM						BS
Murphy, Danielle K.	AGMG		OLSV						BS
Musselman, Meghan A.	ANSC					BISC			BS
Myers, Samuel G.	FARM								BS
Nast, John G.	BCHM								BS
Nelson, Jennasie M.	LAHD		FDAG						BS
Nelson, Josh S.	AGED	ANPR							BS
Neuenschwander, Emily S.	FDSC								BS
Nichols, Evelyn M.	ANSC					PRMD			BS
Nickels, Sarah E.	ANAG		WLFS						BS
Niec, Savanna M.	WLDL								BS
Nies, Nathan D.	AGMG								BS
Niu, Yi	FDSC								BS
Nobbe, Christopher B.	ASM		FARM						BS
Noble, Ronald J.	PLGB								BS
Noffsinger, Chelsea A.	ANSC	BCHM	BIOS			PRMD	LDDP		BS

North, Tanner M.	AGEC								BS
O'Haver, Keith A.	AGMG								BS
Olen, Jeffrey M.	FIMM		OLSV						BS
Orloff, Rachel L.	ANPR								BS
Orth, Charles H.	AGCM								BS
Overmyer, Emily A.	ANSC					PRMD			BS
Paarlberg, Ryan J.	AGMG								BS
Pakan, Nicole T.	ANSC		BIOS			PRMD			BS
Pan, Zhifen	NRPL		ECON						BS
Papariella, Melanie R.	ANSC					PRMD	DSPG		BS
Parker, Benjamin L.	WPMT		FURN						BS
Parry, Jeffrey S.	AGMG					LDDP			BS
Partridge, Amber C.	ANSC					PRMD			BS
Paul, Kevin J.	ASM		FDAG						BS
Pence, Brooke A.	AGMG		POL	OLSV		LDDP			BS
Pence, Kevan A.	FARM								BS
Peng, Patricia	NREV		POL						BS
Penrod, Spenser W.	SLMK								BS
Pepper, Abby L.	NREV								BS
Peterson, Zachary W.	TURF								BS
Pistalo, Vanja	FDMO		OLSV						BS
Plank, Brad M.	AGEC		FARM						BS
Potratz, Emily J.	ANSC					BEHV			BS
Price, Joshua D.	AGMG								BS
Pullen, Derek D.	ASM								BS
Randall, Heather B.	NREV		AEST						BS
Rayburn, Brittany L.	ANSC					PRMD			BS
Reed-Schertz, Henry A.	AGMG		OLSV			LDDP			BS
Reifeis, Andrea C.	NREV								BS
Reiman, Deborah L.	ANAG								BS
Rhoden, Cody M.	WLDL								BS
Richardson, Jacquelynn C.	WLDL								BS
Richardson, Nastassja M.	WLDL								BS
Rios, Daniela M.	WLDL								BS
Rissler, Kelsey M.	TURF								BS
Robinette, Christopher S.	ANSC					PRMD			BS

Rodibaugh, Jenna M.	AGMG					LDDP			BS
Rodibaugh, Kyle J.	AGMG								BS
Romine, Amy D.	AGEC								BS
Rose, Amanda F.	ANSC					PRMD			BS
Rose, Derek M.	WLDL								BS
Rose, Rebecca L.	ENTM								BS
Routh, Elizabeth A.	ANSC		SPNS			PRMD			BS
Ruhl, Kristen N.	FAQS		ANTR						BS
Russell, Edward J.	ENTM								BS
Sandels, Christopher S.	TURF								BS
Sargent, Patrick S.	AGEC								BS
Sarver, Elizabeth M.	ANSC					BEHV			BS
Schluttenhofer, Lisa M.	AGCM		SPNS			DSPG			BS
Schmalzried, Nathaniel J.	WLDL								BS
Schmidt, Collin S.	AGEC		OLSV						BS
Schnell, Tyler	LAHD								BS
Seibert, Bryan R.	ASM		FARM						BS
Shehan, Catherine V.	FDSC		HIST						BS
Shively, Braydon J.	AGMG								BS
Shockley, Allison G.	BCHM		POL			DSPG			BS
Shoults, Christopher A.	INAG		CRPS						BS
Shvets, Dahlia	BCHM		PSY						BS
Sipe, Preston T.	FAQS								BS
Sipes, Anthony R.	WLDL								BS
Smith, Evan C.	NREV								BS
Smith, Hannah E.	FDSC		PEAC						BS
Smith, Lyman L.	AGMG								BS
Smith, Trey M.	WLDL		ENTM						BS
Smith, Tyler J.	SLMK		OLSV						BS
Smoker, Matthew J.	ANPR		FDAG						BS
Snorek, Allison B.	AGEC								BS
Snyder, Dustin Q.	ANPR		FDAG						BS
Snyder, Jeffrey M.	LAHD								BS
Solomon, Heather N.	ANSC					PRMD			BS
Sparenberg, Mitchell M.	ASM		FARM						BS
Sparks, Joseph M.	WLDL								BS

Spencer, Zach R.	SCRM								BS
Spillner, Tyler A.	LAHD								BS
Stamberger, Melinda A.	ANSC					PRMD			BS
Steinbarger, Michelle R.	AGMG					LDDP			BS
Stepanovich, David E.	AGCM		FDAG						BS
Stevens, Daniel W.	ASM		FARM	ANSC					BS
Stilwell, Quinton L.	TURF								BS
Stone, Emily A.	ANSC					PRMD			BS
Strong, Rebecca A.	ANSC					BEHV			BS
Sun, Chen	LAHD								BS
Suseland, Robert D.	WLDL								BS
Susetio, Ricky	FDSC								BS
Sutherlin, William J.	HRTS		CRPS	PLBI					BS
Sweet, Abby M.	ANSC					BISC			BS
Symons, Sarah J.	LAHD								BS
Tam, Rita King Chi	AGEC		ENGL	FDAG					BS
Taylor, Colleen E.	WLDL	FAQS							BS
Taylor, Sarah L.	AGMG		ANSC						BS
Tempel, Joey L.	AGMG		FARM			LDDP			BS
Thackery, John F.	TURF								BS
Thayer, Jessica R.	AGCM								BS
Thomas, Adam T.	NREV								BS
Thomas, Chelsea L.	ANSC					BTCH			BS
Thomas, Kirsten L.	PLGB								BS
Thompson, Paul L.	TURF								BS
Tindell, Shalyse I.	ANSC					PRMD	DSPG	LDDP	BS
Tonner, Tadd C.	AGEC								BS
Toschlog, Kevin A.	AGMG		OLSV			LDDP			BS
Trueblood, Elijah P.	WLDL								BS
Tschida, Kristen C.	ANSC		PSY			BEHV			BS
Tully, Michael P.	AGMG								BS
Tuscan, Ryan A.	HPMK		PLBI						BS
Varjabedian, Arek S.	HPMK								BS
Volenec, Joanne A.	NREV								BS
Wagner, Jillian M.	ANSC					BEHV			BS
Waldrip, Justin M.	ANAG		FARM						BS

Walker, Lauren N.	WLDL								BS
Walsh, Michelle E.	WLDL								BS
Walz, Carly A.	ANAG								BS
Wan, Jing	AGMG								BS
Wang, Jingjin	FDSC								BS
Wang, Yi	LAHD								BS
Wang, Yiran	AGEC								BS
Warner, Rebecca R.	ANAG		FDAG						BS
Wei, Hechen	FDSC								BS
Wenning, Mark A.	ASM	AGEC	FARM						BS
Wentzlaff, Natasha D.	ANSC					BEHV			BS
Werayawarangura, Woradee	SCRM								BS
Westerman, Kile W.	WLDL								BS
Wetzel, Amy E.	WLDL		NREV	UFOR					BS
Whipple, Christopher E.	AGMG		OLSV						BS
Whittaker, Lindsay A.	NREV								BS
Wiatt, Darren I.	AGEC		OLSV			LDDP			BS
Wickware, Carmen L.	FDSC								BS
Wiley, Bryant R.	AGMG								BS
Wilhoit, Weston D.	LAHD								BS
Wilhoite, Madeline M.	AGED								BS
Williams, Sarah M.	AGED								BS
Wilson, Tyler S.	AGMG								BS
Winter, Amy L.	QAEC					DSPG			BS
Wolff, Christina R.	ANSC					PRMD			BS
Wooten, Ian S.	ASM	AGEC	FARM						BS
Xie, Yiyuan	AGFN								BS
Xu, Tianlin	FDSC		FNN	NUTR					BS
Yang, Xin	ANSC					BTCH			BS
Yarbrough, Jeffry J.	SLMK		OLSV						BS
Young, Allyssa E.	ANSC		FDAG			PRMD			BS
Young, Clarence A.	AGEC		ASAM	OLSV					BS
Young, Kirsten E.	BCHM		FRSC						BS
Yuan, Li	AGFN								BS
Zarse, Ashley N.	WLDL								BS
Zeider, Stephanie J.	FDSC								BS

Bredeweg, Rachel A.	BFPE								BSABE
Butler, Daniel P.	ANRE								BSABE
Calhoun, Kaileigh C.	ANRE								BSABE
Chichlowski, Erin M.	ANRE								BSABE
Clingenpeel, Shane D.	BFPE		MATH						BSABE
Deflora, Sarah J.	BFPE								BSABE
Dull, Lucas E.	ANRE								BSABE
Engel, Angelica M.	ANRE		EEE						BSABE
Furrow, Andrew P.	BFPE								BSABE
Geske, Jonathan J.	ANRE								BSABE
Gray, Tanner A.	ANRE								BSABE
Huynh, Jackie B.	BFPE								BSABE
Jacquay, Angela M.	BFPE					LDDP			BSABE
Johnson, Ashley M.	ANRE								BSABE
Johnson, Emily C.	BFPE								BSABE
Kadambi, Harini	BFPE								BSABE
Kaelin, Daniel D.	ANRE		EEE						BSABE
Kennedy, Yixi	BFPE								BSABE
Klobuchar, Tara L.	BFPE								BSABE
Korty, Margaret M.	BFPE								BSABE
Limiac, Christopher M.	ANRE		HIST						BSABE
Littrell, Carl P.	BFPE								BSABE
Losekamp, Katherine L.	ANRE		EEE						BSABE
Lovell, Mitchell C.	BFPE		MGMT						BSABE
Mason, John C.	BFPE								BSABE
Mc Waine, Courtney N.	BFPE		SPNS						BSABE
Morrison, Megan E.	BFPE		ENGL	THTH					BSABE
Nicholson, Lauren M.	BFPE								BSABE
Niemeier, Jacob R.	ANRE		EEE						BSABE
Ostrowski, Lela E.	BFPE								BSABE
Scherer, Molly A.	BFPE								BSABE
Schwab, Jared M.	BFPE								BSABE
Shankar, Shruthi	BFPE								BSABE

[illegible]

Basaran, Benjamin E.	LARC								BSLA
Guevara, Francisco	LARC								BSLA
Henderson, Howard R.	LARC								BSLA
Hu, Xiao	LARC								BSLA
Keck, Logan M.	LARC		ARTS	UFOR					BSLA
Kloc, Benjamin J.	LARC		ARTS						BSLA
Lewman, Nathaniel	LARC								BSLA
Ort, Ryan D.	LARC								BSLA
Peercy, Malachi A.	LARC								BSLA
Trueblood, George D.	LARC								BSLA
Valestin, Andrew A.	LARC								BSLA
Velleman, Brian D.	LARC		ARTS	HORT					BSLA
Wagner, Matthew G.	LARC								BSLA
Wang, Yifei	LARC								BSLA
Alcorn, Kyle R.	AGRY								AAG
Amstutz, Jennifer L.	AGRY								AAG
Babcock, Drake A.	AGEC								AAG
Bacon, Jacob K.	AGRY								AAG
Bahler, Shane A.	AGRY								AAG
Baliles, Justin B.	AGEC								AAG
Barnard, Kristina M.	AGRY								AAG
Beasley, Samuel E.	AGRY								AAG
Beeker, Ashley K.	AGRY								AAG
Beeker, Lori M.	AGRY								AAG
Bevis, Crystal M.	AGRY								AAG
Blankenship, Robert T.	AGEC	AGRY							AAG
Bledsoe, Jacob W.	AGEC								AAG
Bugher, Lori D.	HORT								AAG
Burton, Michael T.	HORT								AAG
Carson, Spencer D	AGRY								AAG
Chalfant, Christopher J.	AGRY								AAG
Crews, Matthew L.	AGRY								AAG

Culp, Kayla S.	AGRY								AAG
Daily, Benjamin F.	AGRY								AAG
Dilts, Charles M.	AGRY								AAG
Dirksen, Michelle L.	AGRY								AAG
Evans, Kent W.	AGEC								AAG
Evenson, Lauren A.	ANSC								AAG
Ferch, Ian R.	AGRY								AAG
Fiechter, Jay G.	AGRY								AAG
Fiock, Alex J.	AGRY								AAG
Freeman, Kelsey J.	AGRY								AAG
Gearhart, Sierra M.	AGRY								AAG
Gordon, Evan F.	AGRY								AAG
Guckien, Evan C.	AGEC								AAG
Harlemert, Daniel P.	AGEC								AAG
Hedrick, Alisha N.	AGRY								AAG
Horney, Andrew J.	ASM								AAG
Hudson, Deric G.	AGRY								AAG
Huff, Dylan J.	AGEC								AAG
Jackson, Tyler M.	AGRY								AAG
Kelich, Mary C.	AGRY								AAG
Kloc, Benjamin J.	HORT								AAG
Knebel, Anthony M.	AGEC	AGRY							AAG
Laudagio, Haley N.	AGRY								AAG
Lee, Michael G.	AGRY								AAG
Liu, Peng	AGEC								AAG
Lopp, Addison J.	AGRY								AAG
Magiera, Chester L.	AGRY								AAG
Miller, Austin T.	AGRY								AAG
Miller, Nikki S.	AGRY								AAG
Misch, Matthew T.	AGEC								AAG
Muhlenkamp, Leo J.	AGEC								AAG
Musselman, Ryan D.	AGRY								AAG
Nelson, Josh S.	AGEC								AAG
Nobbe, Christopher B.	AGEC	AGRY							AAG
Owens, Zachary J.	AGEC								AAG
Parry, Jeffrey S.	AGRY								AAG

Pheasant, Hannah Joy V.	AGEC								AAG
Pranger, Samantha M.	AGRY								AAG
Pullen, Derek D.	AGEC		FARM						AAG
Putt, Joel B.	AGRY								AAG
Rexing, Jordan M.	AGRY								AAG
Sargent, Patrick S.	AGRY								AAG
Scott, John R.	AGEC								AAG
Seibert, Bryan R.	AGEC	AGRY							AAG
Smith, Kelsey R.	AGRY								AAG
Stumler, Nevin D.	AGRY								AAG
Tonner, Tadd C.	AGRY								AAG
Troxel, Jackson H.	AGRY								AAG
Tully, Michael P.	AGRY								AAG
Wallace, Adam L.	AGEC	AGRY							AAG
Wetli, Alysha R.	AGRY								AAG
Whirrett, Austin J.	AGRY								AAG
Wiatt, Darren I.	AGRY								AAG
Williamson, Dana V.	HORT								AAG
Wilson, Tyler S.	AGRY								AAG
Wyckoff, Jacob K.	AGRY								AAG